Pioneer

BDP-320

Blu-ray Disc PLAYER

Operating Instructions

Thank you for buying this Pioneer product.
Please read through these operating instructions so you will know how to operate your model properly. After you have finished reading the instructions, put them away in a safe place for future reference.

IMPORTANT

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION:
TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

D3-4-2-1-1_A1_En

CAUTION
This product is a class 1 laser product, but this product contains a laser diode higher than Class 1. To ensure continued safety, do not remove any covers or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.
The following caution label appears on your unit.
Location: inside of the unit

D3-4-2-1-8*_C_En

WARNING
To prevent a fire hazard, do not place any naked flame sources (such as a lighted candle) on the equipment. D3-4-2-1-7a_A_En

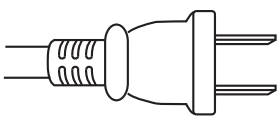
VENTILATION CAUTION
When installing this unit, make sure to leave space around the unit for ventilation to improve heat radiation (at least 10 cm at top, 10 cm at rear, and 10 cm at each side).

WARNING
Slots and openings in the cabinet are provided for ventilation to ensure reliable operation of the product, and to protect it from overheating. To prevent fire hazard, the openings should never be blocked or covered with items (such as newspapers, table-cloths, curtains) or by operating the equipment on thick carpet or a bed. D3-4-2-1-7b_A_En

WARNING
This equipment is not waterproof. To prevent a fire or shock hazard, do not place any container filled with liquid near this equipment (such as a vase or flower pot) or expose it to dripping, splashing, rain or moisture. D3-4-2-1-3_B_En

WARNING
Before plugging in for the first time, read the following section carefully.
The voltage of the available power supply differs according to country or region. Be sure that the power supply voltage of the area where this unit will be used meets the required voltage (e.g., 230 V or 120 V) written on the rear panel. D3-4-2-1-4_A_En

For Taiwan exclusively
Taiwanese two pin flat-bladed plug



If the AC plug of this unit does not match the AC outlet you want to use, the plug must be removed and appropriate one fitted. Replacement and mounting of an AC plug on the power supply cord of this unit should be performed only by qualified service personnel. If connected to an AC outlet, the cut-off plug can cause severe electrical shock. Make sure it is properly disposed of after removal.
The equipment should be disconnected by removing the mains plug from the wall socket when left unused for a long period of time (for example, when on vacation). **D3-4-2-2-1a_A_En**

CAUTION
The ⏻ STANDBY/ON switch on this unit will not completely shut off all power from the AC outlet. Since the power cord serves as the main disconnect device for the unit, you will need to unplug it from the AC outlet to shut down all power. Therefore, make sure the unit has been installed so that the power cord can be easily unplugged from the AC outlet in case of an accident. To avoid fire hazard, the power cord should also be unplugged from the AC outlet when left unused for a long period of time (for example, when on vacation). **D3-4-2-2-2a_A_En**

POWER-CORD CAUTION

Handle the power cord by the plug. Do not pull out the plug by tugging the cord and never touch the power cord when your hands are wet as this could cause a short circuit or electric shock. Do not place the unit, a piece of furniture, etc., on the power cord, or pinch the cord. Never make a knot in the cord or tie it with other cords. The power cords should be routed such that they are not likely to be stepped on. A damaged power cord can cause a fire or give you an electrical shock. Check the power cord once in a while. When you find it damaged, ask your nearest PIONEER authorized service center or your dealer for a replacement. **S002*_En**

Operating Environment

Operating environment temperature and humidity:
+5 °C to +35 °C (+41 °F to +95 °F); less than 85 %RH (cooling vents not blocked)
Do not install this unit in a poorly ventilated area, or in locations exposed to high humidity or direct sunlight (or strong artificial light)

D3-4-2-1-7c*_A1_En

This product is for general household purposes. Any failure due to use for other than household purposes (such as long-term use for business purposes in a restaurant or use in a car or ship) and which requires repair will be charged for even during the warranty period. **K041_En**

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

For Australia Model

C67-7-3_En

For U.K. model:
Replacement and mounting of an AC plug on the power supply cord of this unit should be performed only by qualified service personnel.

IMPORTANT: THE MOULDED PLUG

This appliance is supplied with a moulded three pin mains plug for your safety and convenience. A 5 amp fuse is fitted in this plug. Should the fuse need to be replaced, please ensure that the replacement fuse has a rating of 5 amps and that it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark or the BSI mark on the body of the fuse.

If the plug contains a removable fuse cover, you must ensure that it is refitted when the fuse is replaced. If you lose the fuse cover the plug must not be used until a replacement cover is obtained. A replacement fuse cover can be obtained from your local dealer.

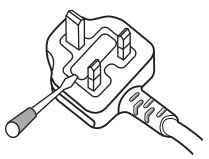
If the fitted moulded plug is unsuitable for your socket outlet, then the fuse shall be removed and the plug cut off and disposed of safely. There is a danger of severe electrical shock if the cut off plug is inserted into any 13 amp socket.

If a new plug is to be fitted, please observe the wiring code as shown below. If in any doubt, please consult a qualified electrician.

IMPORTANT: The wires in this mains lead are coloured in accordance with the following code:
Blue : Neutral Brown : Live
As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows ;

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter **N** or coloured BLACK.
The wire which is coloured BROWN must be connected to the terminal which is marked with the letter **L** or coloured RED.

How to replace the fuse: Open the fuse compartment with a screwdriver and replace the fuse.



D3-4-2-1-2-2_B_En

Information for users on collection and disposal of old equipment and used batteries

(Symbol for equipment)

(Symbol examples for batteries)

Pb

These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.

For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points in accordance with your national legislation.

By disposing of these products and batteries correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.

For more information about collection and recycling of old products and batteries, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.

These symbols are only valid in the European Union.

For countries outside the European Union:

If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.

K058a_A1_En

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Chapter 1

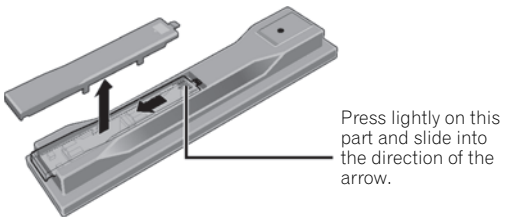
Before you start

What's in the box

- Remote control x 1
- Video/audio cable (yellow/white/red plugs) x 1
- AA/R6 dry cell batteries x 2
- Warranty card
- Operating instructions (this document)
- *U.K., Australia and New Zealand models:* Power cord x 1
  Others: Power cord x 2

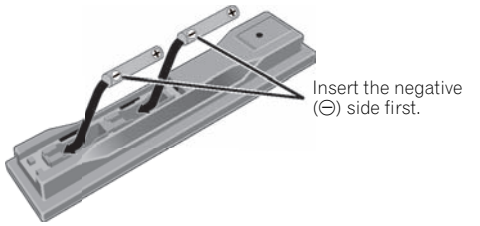
Putting the batteries in the remote control

1 Open the rear cover.



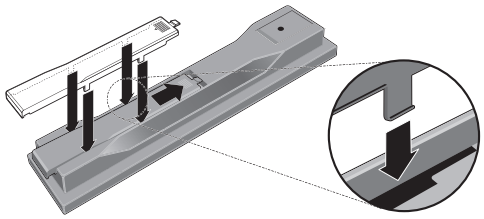
2 Insert the batteries (AA/R6 x 2).

Insert as indicated by the ⊕/⊖ marks into the battery compartment.



3 Close the rear cover.

Close securely (a click should be heard).



Caution

- Do not use any batteries other than the ones specified. Also, do not use a new battery together with an old one.
- When loading the batteries into the remote control, set them in the proper direction, as indicated by the polarity marks (⊕ and ⊖).
- Do not heat batteries, disassemble them, or throw them into flames or water.
- Batteries may have different voltages, even if they look similar. Do not use different kinds of batteries together.
- To prevent leakage of battery fluid, remove the batteries if you do not plan to use the remote control for a long period of time (1 month or more). If the fluid should leak, wipe it carefully off the inside of the case, then insert new batteries. If a battery should leak and the fluid should get on your skin, flush it off with large quantities of water.
- When disposing of used batteries, please comply with governmental regulations or environmental public instruction's rules that apply in your country/area.
- **WARNING**
  Do not use or store batteries in direct sunlight or other excessively hot place, such as inside a car or near a heater. This can cause batteries to leak, overheat, explode or catch fire. It can also reduce the life or performance of batteries.
  D3-4-2-3-3_En

Types of discs/files that can be played

Playable discs

Discs with the logo marks below indicated on the disc label, package or jacket can be played.

Disc type		Logo	Application format					
			BDMV[1]	BDAV	DVD-Video	DVD VR	CD-DA DTS-CD	DATA-DISC[2]
BD[3]	BD-ROM		✓	✓	✗	✗	✗	✗
	BD-R[4]		✓	✓	✗	✗	✗	✗
	BD-RE		✓	✓	✗	✗	✗	✗
DVD	DVD-ROM		✓	✗	✓	✗	✗	✓
	DVD-R[3,4,5]		✓	✗	✓	✓	✗	✓
	DVD-RW[4,6]		✓	✗	✓	✓	✗	✓
	DVD+R[3,4]		✓	✗	✓	✗	✗	✓
	DVD+RW[4]		✓	✗	✓	✗	✗	✓
CD	CD-DA (Audio CD)		✗	✗	✗	✗	✓	✗
	CD-R[4]		✗	✗	✗	✗	✓	✓
	CD-RW[4]		✗	✗	✗	✗	✓	✓
	CD-ROM		✗	✗	✗	✗	✓	✓

1. Including the AVCHD format.
2. Discs on which video, image or audio files are recorded.
3. Including dual-layered discs.
4. Finalize (close) them before playing them on this player.
5. DVD-R for Authoring discs (3.95 and 4.7 GB) cannot be played.
6. Version 1.0 DVD-RW discs cannot be played.

"Blu-ray Disc" and *are trademarks.*

is a trademark of DVD Format/Logo Licensing Corporation.

❖ Discs that cannot be played

- HD DVDs
- DVD Audio discs
- DVD-RAM discs
- SACDs
- Video CDs
- SVCDs

It is possible that some discs other than the ones listed above may not be playable either.

Note

- Some discs cannot be played, even if one of the logo marks on the previous page is indicated.
- To play 8 cm discs, set the disc in the 8 cm disc depression in the center of the disc tray. No adapter is necessary. 8 cm BD-ROMs cannot be played.

❖ About audio formats

The following audio formats are supported on this player:

- Dolby TrueHD
- Dolby Digital Plus
- Dolby Digital
- DTS-HD Master Audio
- DTS-HD High Resolution Audio
- DTS Digital Surround
- MPEG
- MPEG-2 AAC
- Linear PCM

To enjoy the surround sound of Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio and DTS-HD High Resolution Audio, it is recommended to connect the player to an AV receiver or amplifier compatible with these audio formats using an HDMI cable. After loading a BD containing sound in one of these audio formats, select the audio format on the menu screen.

See *About the audio output settings* on page 45 for the output conditions of the different formats.

Manufactured under license from Dolby Laboratories. Dolby and the double-D symbol are trademarks of Dolby Laboratories.

Manufactured under license under U.S. Patent #'s: 5,451,942; 5,956,674; 5,974,380; 5,978,762; 6,226,616; 6,487,535; 7,392,195; 7,272,567; 7,333,929; 7,212,872 & other U.S. and worldwide patents issued & pending. DTS is a registered trademark and the DTS logos, Symbol, DTS-HD and DTS-HD Master Audio | Essential are trademarks of DTS, Inc. © 1996-2008 DTS, Inc. All Rights Reserved.

❖ Playing BDs

- BDs (BDMV) compatible with the formats below can be played.
  - Blu-ray Disc Read-Only (ROM) Format Version 2
  - Blu-ray Disc Recordable (R) Format Version 2
  - Blu-ray Disc Rewritable (RE) Format Version 3

This player supports BD-ROM Profile 2.

BONUSVIEW functions such as playback of secondary video (Picture-in-Picture) and secondary audio can be used. The data used with the BONUSVIEW functions (the secondary video (Picture-in-Picture) and secondary audio data) may be stored in the storage. For details on secondary video and secondary audio playback, refer to the disc's instructions.

BONUS*VIEW*™

"BONUSVIEW" is trademark of Blu-ray Disc Association.

BD-LIVE functions such as downloading movie trailers or additional audio and subtitle languages and playing on-line games can be enjoyed over the Internet. The data downloaded with the BD-LIVE function (trailers, etc.) is stored in the storage. Refer to the disc's instructions for details about BD-LIVE functions.

BD*LIVE*™

"BD-LIVE" logo is trademark of Blu-ray Disc Association.

With BD-ROMs, it is possible to use BD-J (Java) applications to create highly interactive titles, for example including games.

Java™ POWERED

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and other countries.

The player's internal storage has a maximum capacity of roughly 1 GB. Use an external storage connected to the **USB** port if you want to store large quantities of data (page 16). If a message saying there is not enough storage space appears, erase any unnecessary data (page 42).

- BDs (BDAV) compatible with the formats below can be played.
  - Blu-ray Disc Recordable (R) Format Version 1
  - Blu-ray Disc Rewritable (RE) Format Version 2

❖ Playing DVDs

This label indicates playback compatibility with DVD-RW discs recorded in VR format (Video Recording format). However, for discs recorded with a record-only-once encrypted program, playback can only be achieved using a CPRM compatible device.

The AVCHD is a high definition (HD) digital video camera recorder format recording high-definition onto certain media by using highly efficient codec technologies.

"AVCHD" and the "AVCHD" logo are trademarks of Panasonic Corporation and Sony Corporation.

❖ About region numbers

Blu-ray Disc Player and BD-ROM or DVD-Video discs are assigned region numbers according to the region in which they are sold.

This player's region numbers are:

- BD-ROM:
  - *U.K., Australia and New Zealand models*: B
  - *Others*: A
- DVD-Video:
  - *U.K. models*: 2
  - *Australia and New Zealand models*: 4
  - *Others*: *3*

Discs not including these numbers cannot be played. Discs playable on this player are as shown below.

- BDs:
  - *U.K., Australia and New Zealand models*: B (including B) and ALL
  - *Others*: A (including A) and ALL
- DVDs:
  - *U.K. models*: 2 (including 2) and ALL
  - *Australia and New Zealand models*: 4 (including 4) and ALL
  - *Others*: 3 (including 3) and ALL

❖ Playing CDs

Regarding copy protected CDs: This player is designed to conform to the specifications of the Audio CD format. This player does not support the playback or function of discs that do not conform to these specifications.

❖ DualDisc playback

A DualDisc is a new two-sided disc, one side of which contains DVD content — video, audio, etc. — while the other side contains non-DVD content such as digital audio material.

The DVD side of a DualDisc can be played on this player (excluding any DVD-Audio content).

The non-DVD, audio side of the disc is not compatible with this player.

It is possible that when loading or ejecting a DualDisc, the opposite side to that being played will be scratched. Scratched discs may not be playable.

For more detailed information on the DualDisc specification, please refer to the disc manufacturer or disc retailer.

❖ Playing discs created on computers or BD/DVD recorders

- It may not be possible to play discs recorded using a computer due to the application settings or computer's environment settings. Record discs in a format playable on this player. For details, contact the dealer.
- It may not be possible to play discs recorded using a computer or a BD/DVD recorder, if burn quality is not good due to characteristics of the disc, scratches, dirt on the disc, dirt on the recorder's lens, etc.

Playable files

Video, image and audio files recorded on DVDs and CDs can be played.

⚠ Caution

- In DVD, only the one recorded by the ISO 9660 file system can be played.
- Some files may not be playable.
- For some files, it may not be possible to use certain functions during playback.
- It may not be possible to play some files, even if they have the extension of a file playable on this player.
- Files protected by DRM (Digital Rights Management) cannot be played (not including DivX VOD files).

❖ Supported video file formats

- **DivX**

  DivX® is a digital video format created by DivX, Inc. This is an official DivX Certified or DivX Ultra Certified device that plays DivX video.

  Conform to the size under 720 x 576 pixels/720 x 480 pixels.

  DivX files encoded with GMC/Qpel option cannot be played.

  Only audio signals with MP3 or Dolby Digital (AC3) format are output.

  Note that files other than the ones containing DivX video cannot be played, even if they have the extension ".avi".

DivX® is a registered trademark of DivX, Inc., and is used under license.

– *Plays DivX® video*

Note

- This DivX® Certified device must be registered in order to play DivX Video-on-Demand (VOD) content. First generate the DivX VOD registration code for your device and submit it during the registration process. [Important: DivX VOD content is protected by a DivX DRM (Digital Rights Management) system that restricts playback to registered DivX Certified devices. If you try to play DivX VOD content not authorized for your device, the message **Authorization Error** will be displayed and your content will not play.] Learn more at www.divx.com/vod.
  - This player's DivX VOD registration code can be checked at **Initial Setup → Playback → DivX VOD → Registration Code** (page 39).
  - The number of views is restricted for some DivX VOD files. When such files are played on this player, the remaining number of views is displayed. Files for which the remaining number of views has reached 0 cannot be played (**Rental Expired** is displayed). Files for which the number of views is not restricted can be played as many times as you like (the remaining number of views is not displayed).

❖ Supported image file formats

- **JPEG**
  File format: JFIF Ver. 1.02/Exif Ver. 2.2
  Resolution: Up to 4096 x 4096 pixels
  Only baseline JPEG files are supported.

❖ Supported audio file formats

- **Windows Media™ Audio 9 (WMA9)**
  Bit rate: Up to 192 kbps
  Sampling frequencies: 22.05 kHz, 32 kHz, 44.1 kHz and 48 kHz

  Windows Media is either a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.

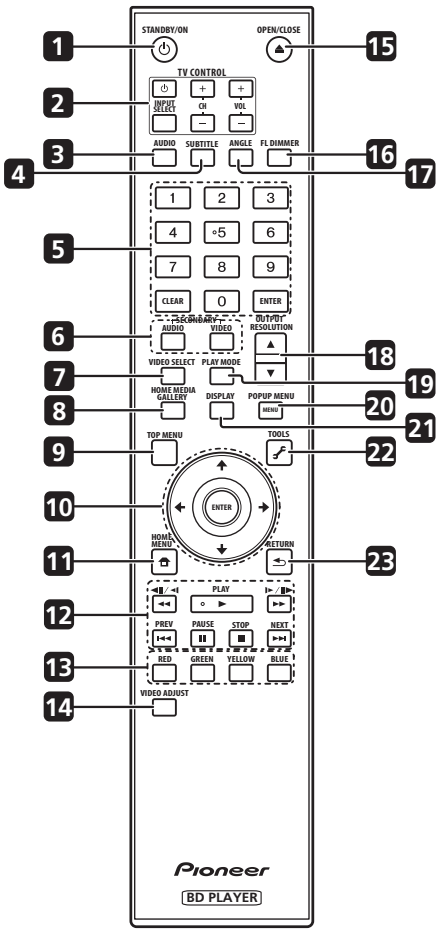
  This product includes technology owned by Microsoft Corporation and cannot be used or distributed without a license from Microsoft Licensing, Inc.
- **MPEG-1 Audio Layer 3 (MP3)**
  Bit rate: Up to 320 kbps
  Sampling frequencies: 8 kHz, 11.025 kHz, 12 kHz, 16 kHz, 22.05 kHz, 24 kHz, 32 kHz, 44.1 kHz and 48 kHz

❖ Playable file extensions

- **Video files**
  .divx and .avi
- **Image files**
  .jpg and .jpeg
- **Audio files**
  .wma and .mp3

Part Names and Functions

Remote Control



1 ⏻ **STANDBY/ON** – Press to turn the power on and off.

2 **TV CONTROL** – (page 19)

3 **AUDIO** – (page 26)

4 **SUBTITLE** – (page 25)

5 **Number buttons** – Use these to select and play the title/chapter/track you want to view or listen to and to select items from menus.
CLEAR – Press to clear the numeric number, etc.
ENTER – Press to execute the selected item or enter a setting that has been changed, etc.

6 **SECONDARY AUDIO** – (page 26)
SECONDARY VIDEO – (page 26)

7 **VIDEO SELECT** – (page 21)

8 **HOME MEDIA GALLERY** – (page 31)

9 **TOP MENU** – Press to display the top menu of the BD-ROM or DVD-Video.

10 ↑/↓/←/→ – Use to select items, change settings and move the cursor.
ENTER – Press to execute the selected item or enter a setting that has been changed, etc.

11 **HOME MENU** – (page 36)

12 ► **PLAY** – (page 24)
II PAUSE – (page 24)
■ **STOP** – (page 24)
I◄◄ PREV/►►I NEXT – (page 25)
◄◄/◄II/◄I – (page 25)
I►/II►/►► – (page 25)

13 **RED/GREEN/YELLOW/BLUE** – Use these to navigate BD-ROM menus.

14 **VIDEO ADJUST** – (page 34)

15 ▲ **OPEN/CLOSE** – Press to open and close the disc tray.

16 **FL DIMMER** – When pressed, the brightness of the player's front panel display and the status of the indicators on the player's front panel changes.

Front panel display	Indicators		
	Blu-ray	FL OFF	HDMI[1]
Bright	Bright	Off	Lit
Medium	Bright	Off	Lit
Dark	Dark	Off	Lit
Off	Off	Lit	Off

1. This lights when an HDMI-compatible device is connected to an **HDMI OUT** terminal (page 13).

17 **ANGLE** – (page 25)

18 **OUTPUT RESOLUTION** – (page 21)

19 **PLAY MODE** – (page 28)

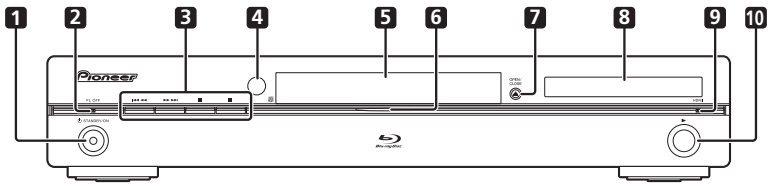
20 **POP UP MENU/MENU** – Press to display the BD-ROM or DVD-Video menus.

21 **DISPLAY** – (page 26)

22 **TOOLS** – (page 20)

23 **RETURN** – Press to return to the previous screen.

Front Panel



1 ⏻ **STANDBY/ON** – Press to turn the power on and off.

2 **FL OFF indicator** – Lights when the player's front panel display is turned off pressing **FL DIMMER**.

3 I◄◄/◄◄ – Press to skip to the beginning of the previous title/chapter/track/file. Press and hold to start reverse scanning (page 25).
►►/►►I – Press to skip to the beginning of the next title/chapter/track/file. Press and hold to start forward scanning (page 25).
II – Press during playback to pause. Press again to restart playback.
■ – Press to stop playback.

4 **Remote control sensor** – Point the remote control to this, then operate it within approximately 7 m.
The player may have trouble capturing remote control signals if there is a fluorescent light nearby. If this happens, move the player away from the fluorescent light.

5 **Disc tray**

6 **Blu-ray indicator** – Lights when the power is turned on.

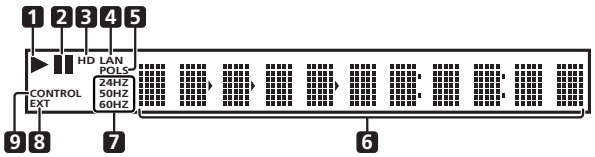
7 ▲ **OPEN/CLOSE** – Press to open and close the disc tray.

8 **Front panel display**

9 **HDMI indicator** – (page 13)

10 ► – Press to start playback.

Front Panel Display



1 ► – (page 24)

2 ❚❚ – (page 24)

3 **HD** – This lights when an HDMI cable is connected and video signals are being output with a resolution of 1080/50i, 1080/50p, 720/50p, 1080/24p, 1080/60i, 1080/60p or 720/60p. It also lights when a component video cable is connected and video signals are being output with a resolution of 1080/60i or 720/60p.

4 **LAN** – (page 17)

5 **PQLS** – (page 14)

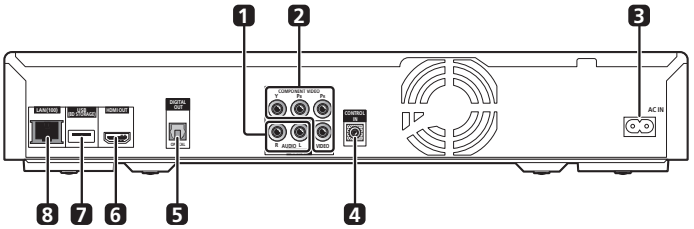
6 **Character display** – Displays the title/chapter/track number, elapsed time, etc.

7 **24HZ/50HZ/60HZ** – The frequency of the video frame or field being output lights.

8 **EXT** – (page 16)

9 **CONTROL** – (page 14)

Rear Panel



1 **AUDIO OUT terminals** – (page 16)

2 **VIDEO OUT terminals**
VIDEO – (page 16)
COMPONENT VIDEO – (page 16)

3 **AC IN** – (page 17)

4 **CONTROL IN terminal** – Use to control this player from the remote sensor of another Pioneer component with a **CONTROL OUT** terminal and bearing the 5R mark. Connect the **CONTROL OUT** terminal of the other component to **CONTROL IN** on this player using a mini-plug cord (commercially available).

Caution

- Be sure to connect cables for outputting the audio and video signals.
- When connected via System Control, point the remote control toward the connected component (such as an AV receiver or amplifier). The remote will not work correctly when pointed at this player.
- You cannot use System Control with components that do not have a System Control terminal or with components manufactured by companies other than Pioneer.

5 **DIGITAL OUT (OPTICAL) terminal** – (page 16)

6 **HDMI OUT terminal** – (page 15)

7 **USB (BD STORAGE) port** – (page 16)

8 **LAN (100) terminal** – (page 17)

Chapter 2

Connecting up

Be sure to turn off the power and unplug the power cord from the power outlet whenever making or changing connections.

After connecting, make the settings at the **Setup Navigator** menu according to the type of cable connected (page 18).

Also refer to the operating instructions of the device being connected.

Connecting using an HDMI cable

The audio and video signals can be transferred to HDMI-compatible devices as digital signals with no loss of sound or video quality.

Note

- Make the settings at the **Setup Navigator** menu according to connected HDMI-compatible device (page 18).
- The **HDMI indicator** on the player's front panel lights when an HDMI-compatible device is connected to an **HDMI OUT** terminal (page 11).
- 1080p video signals may not be output, depending on the HDMI cable being used.

About HDMI

This player incorporates High-Definition Multimedia Interface (HDMI™) technology.

HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE

HDMI, the HDMI Logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing, LLC.

The player supports Deep Color.
The conventional players can transmit a video signal with 8 bit color depth in the YCbCr 4:4:4 or RGB formats, the players supporting Deep Color can transmit a video signal with a color bit depth of greater than 8 bits per color component. Subtle color gradations can be reproduced when connected to a TV that supports Deep Color.

This product is compatible with "x.v.Color" that have the capability to realize a wide-gamut color space based on the xvYCC specifications.
Playing video signals conforming to "xvYCC" standards on this player when connected to an "x.v.Color"-compatible TV, etc., expands color reproduction capabilities, allowing natural colors to be reproduced more faithfully than ever.
"x.v.Color" is a promotion name given to the products that have the capability to realize a wide-gamut color space based on the international standard specifications defined as xvYCC.

x.v.Colour

x.v.Color

"x.v.Color", **x.v.Colour** *and* **x.v.Color** *are trademarks of Sony Corporation.*

❖ Audio signals that can be transferred with the player's HDMI OUT terminal

- Dolby TrueHD
- Dolby Digital Plus
- Dolby Digital
- DTS-HD Master Audio
- DTS-HD High Resolution Audio
- DTS Digital Surround
- MPEG-2 AAC
- Linear PCM

  Linear PCM audio signals meeting the following conditions can be output:
  - Sampling frequency: 32 kHz to 192 kHz
  - Number of channels: Up to 8 (up to 6 for a 192 kHz sampling frequency)

For details, see *About the audio output settings* on page 45.

❖ About the HDMI High Speed Transmission

This player outputs 1080/50p, 1080/60p and Deep Color video signals. If your TV supports 1080/50p, 1080/60p or Deep Color signals, use a High Speed HDMI™ cable in order to take advantage of the maximum performance the player and TV can offer. Also set **HDMI High Speed Transmission** to **On** (page 38).

High Speed HDMI™ cables are tested to carry signals up to 1080p. 1080/50i, 1080/50p, 720/50p, 1080/24p, 1080/60i, 1080/60p and 720/60p video signals that are capable of Deep Color can also be carried.

Note

- Set **HDMI High Speed Transmission** to **Off** when using an HDMI cable other than a High Speed HDMI™ cable (a Standard HDMI™ cable).
- The following restrictions apply when **HDMI High Speed Transmission** is set to **Off**:
  - Deep Color signals are not output.
  - If the output video resolution is set to **Auto**, the signals are output with a resolution of 1080/50i or 1080/60i when TV's preferred resolution is 1080/50p or 1080/60p.
  - When the output video resolution is set to 576i/480i or 576p/480p, Dolby TrueHD and DTS-HD Master Audio audio signals are output as Dolby Digital, DTS Digital Surround or linear PCM signals. 96 kHz or 192 kHz multi-channel audio signals are output as linear PCM 2-channel audio signals (page 45).
- When an HDMI cable with a built-in equalizer is connected, it may not operate properly.

❖ When connected to a DVI device

- **It is not possible to connect DVI devices (computer displays, for example) that are not compatible with HDCP.** HDCP is a specification to protect audiovisual content across the DVI/HDMI interface.
- No audio signals are output. Connect using an audio cable, etc.
- This player is designed for connection with HDMI-compatible devices. When connected to a DVI device, it may not operate properly depending on the DVI device.

About KURO LINK function

The functions listed below work when a Pioneer KURO LINK-compatible Flat Screen TV, AV system (AV receiver or amplifier, etc.) or HD AV Converter is connected to the player using an HDMI cable.

Functions operated from the TV
Such player operations as starting and stopping playback and displaying the menus can be performed from the Flat Screen TV.

Auto-select function
The input switches automatically on the Flat Screen TV, AV system (AV receiver or amplifier, etc.) and HD AV Converter when playback is started on the player or the Home Menu or Home Media Gallery is displayed. When the input is switched, the playback picture, the Home Menu or Home Media Gallery appears on the Flat Screen TV.

Simultaneous power function
When playback on the player is started or the Home Menu or Home Media Gallery is displayed, if the Flat Screen TV's power was off, its power turns on automatically. When the Flat Screen TV's power is turned off, the player's power automatically turns off.

Unified language function
When the language information from a connected Flat Screen TV is received, you can have the player's on-screen display language change automatically to that of the Flat Screen TV. This function is available only when playback is stopped and the menu screen is not displayed.

Caution

- Also refer to the operating instructions of the Flat Screen TV, AV system (AV receiver or amplifier, etc.) and HD AV Converter.

Note

- **CONTROL** on the player's front panel display lights when the KURO LINK function is activated (page 12).

❖ To use the KURO LINK function

- The KURO LINK function only works when outputting video signals from the **HDMI OUT** terminal.
- The KURO LINK function works when **KURO LINK** is set to **On** on the player (page 38).
- The KURO LINK function operates when KURO LINK is set to On for all devices connected with HDMI cables. Once connections and the settings of all the devices are finished, be sure to check that the player's picture is output to the Flat Screen TV. (Also check after changing the connected devices and reconnecting HDMI cables.) The KURO LINK function may not operate properly if the player's picture is not properly output to the Flat Screen TV.
- Use High Speed HDMI™ cables when using the KURO LINK function. The KURO LINK function may not operate properly if other HDMI cables are used.
- For some models, the KURO LINK function may be referred to as "HDMI Control".
- The Simultaneous power function is activated when the player is set as follows (page 38):
  Display Power On: **On**
  Display Power Off: **On**

❖ About PQLS function

The PQLS (Precision Quartz Lock System) is a transfer control technology using the KURO LINK function. The player's output signals are controlled from the AV receiver or amplifier to achieve high quality sound playback using the quartz oscillator of AV receiver or amplifier. This eliminates the influence of the jitter generated upon transfer which can adversely affect the sound quality.

- This player supports the "PQLS 2ch Audio" that is only activated when playing an audio CD (CD-DA).
- The PQLS function is only activated when a Pioneer AV receiver or amplifier compatible with the "PQLS 2ch Audio" function is connected directly to the player's **HDMI OUT** terminal using an HDMI cable.

- The PQLS function is activated when the player is set as follows (page 38):
  KURO LINK: **On**
  PQLS: **Auto**
- Also refer to the operating instructions of AV receiver or amplifier.
- Please see the Pioneer website for AV receivers or amplifiers that support the PQLS function.

Caution

- If the output video resolution is switched when playing an audio CD (CD-DA), the PQLS function does not work. This function will work again after playback stops and restarts.

Note

- **PQLS** on the player's front panel display lights when the PQLS function is activated (page 12).

❖ About connections to components of other makes supporting the KURO LINK function

The functions listed below work when a TV or AV system (AV receiver or amplifier, etc.) supporting the player's KURO LINK function is connected to the player using an HDMI cable. (Depending on your TV or AV system (AV receiver or amplifier, etc.), it could happen that not all of the functions will work.)

- Functions operated from the TV
- Auto-select function
- Simultaneous power function
- Unified language function

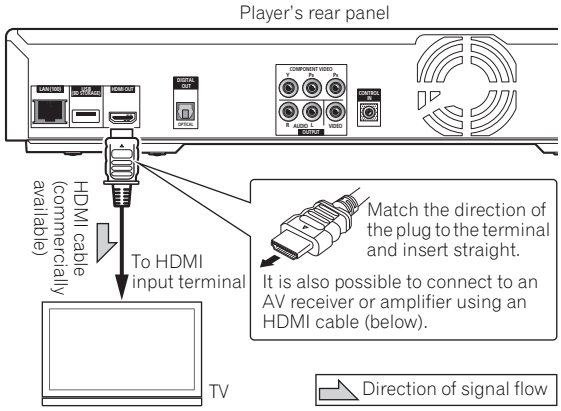
Please see the Pioneer website for the latest information on brands and model numbers of other brands that support the KURO LINK function.

Connecting a TV

See *Connecting an AV receiver or amplifier* below to connect an AV receiver or amplifier using an HDMI cable.

Caution

- Hold the plug when connecting and disconnecting the cable.
- Placing a load on the plug could result in faulty contact and no video signals being output.

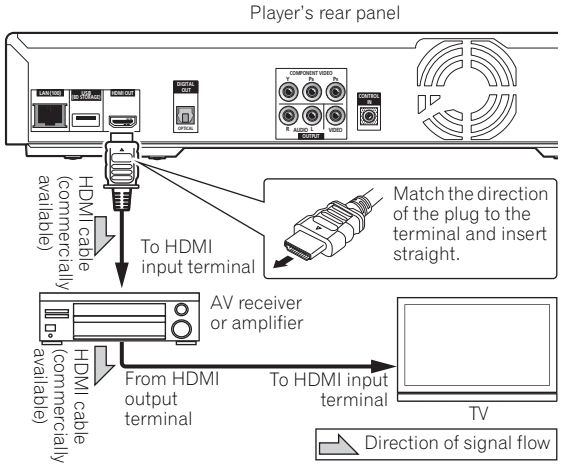


Connecting an AV receiver or amplifier

Connect to an AV receiver or amplifier in order to enjoy the surround sound of Dolby TrueHD, Dolby Digital Plus, Dolby Digital, DTS-HD Master Audio, DTS-HD High Resolution Audio or DTS Digital Surround. For instructions on connecting the TV and speakers to the AV receiver or amplifier, refer to the operating instructions of AV receiver or amplifier.

Caution

- Hold the plug when connecting and disconnecting the cable.
- Placing a load on the plug could result in faulty contact and no video signals being output.



Connecting video and audio cables

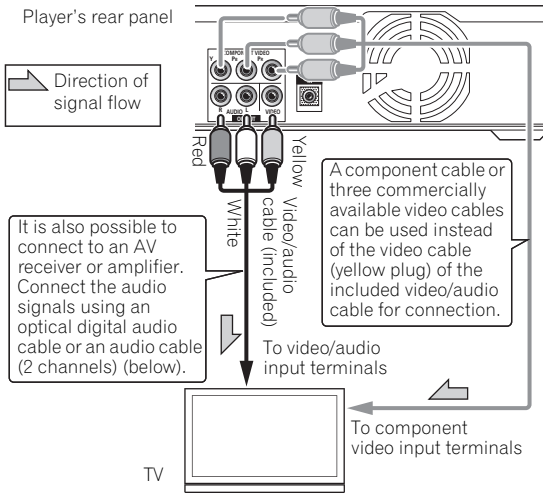
Note

- Make the settings in the **Setup Navigator** menu according to the type of cable connected (page 18).
- To output video signals from this player, connect using one of the following (not including when connected using an HDMI cable): a component video cable or a video cable.

Connecting a TV using a video/audio cable

Caution

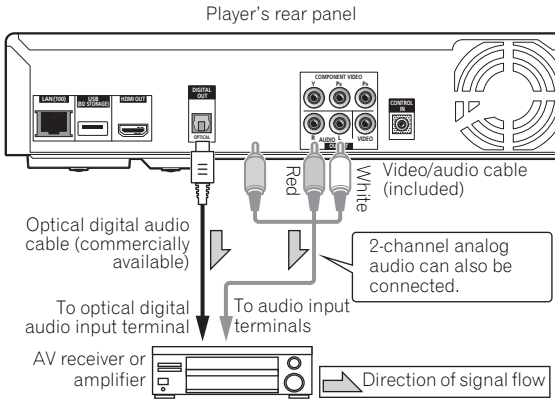
- **Connect the player's video output directly to your TV.**
  This player supports analog copy protection technology. Therefore the picture may not be displayed properly if connected to a TV via a DVD recorder/video deck or when playing the player's output material that is recorded by a DVD recorder/video deck. Furthermore, the picture may not be displayed properly due to the copy protection when the player is connected to a TV with a built-in video deck. For details, contact the manufacturer of your TV.



Note

- Video signals are output with a resolution of 576/50i or 480/60i when connected using a video cable.
- When connected to the TV using a component video cable, video signals are not output with a resolution of 1080/50i, 1080/50p, 720/50p, 1080/24p or 1080/60p.
- Depending on the output video resolution setting, the picture may not be output (page 21).

Connecting an AV receiver or amplifier using an optical digital audio cable



Note

- To switch the video from the AV receiver or amplifier, also connect the video output terminals.

Connecting components to the USB port

The data downloaded with the BD-LIVE function and the data used with the BONUSVIEW function when playing BD-ROMs can be stored on a device connected to the **USB** port (external storage).

About USB (external storage) devices

The USB (external storage) devices that can be connected to the player are as shown below.

- USB 2.0-compatible memory devices or hard disks
- FAT16 or FAT32 file system, minimum 1 GB capacity (2 GB or more recommended)

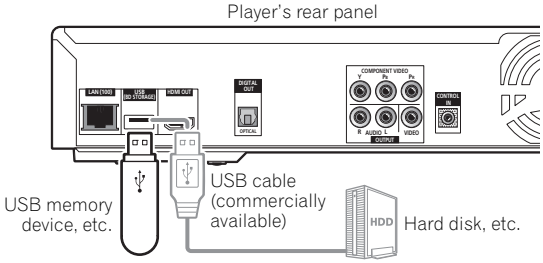
Note

- Devices formatted with a file system other than the above cannot be used. Such devices may however be usable if they are formatted from the player.
- External storage devices may not be recognized if they contain multiple partitions.
- Some external storage devices may not operate with this player.
- Operation of external storage devices (USB memory devices, external hard disks, etc.) is not guaranteed.

Connecting the USB (external storage) device

Caution

- Be sure to turn the player's power off before connecting or disconnecting external storage devices.
- Use empty external storage devices (on which nothing is stored).
- When using an external hard disk as the external storage device, be sure to turn on the hard disk's power before turning on the player's power.
- If the external storage device is write-protected, be sure to disable the write-protection.
- When connecting the USB cable, hold onto the plug, set the plug in the proper direction for the port and insert it horizontally.
- Placing excessive loads on the plug may result in poor contact, making it impossible to write data on the external storage device.
- The player is equipped with an internal storage. This internal storage cannot be used when an external storage device is connected.
- When a USB memory device or external hard disk is connected and the player's power is turned on, do not unplug the power cord.



Note

- The **EXT** indicator on the player's front panel display lights when data can be stored on the external storage (page 12).
- Devices may not work if connected to the **USB** port via a memory card reader or USB hub.
- Use a USB cable with a length of 2 meters or less.

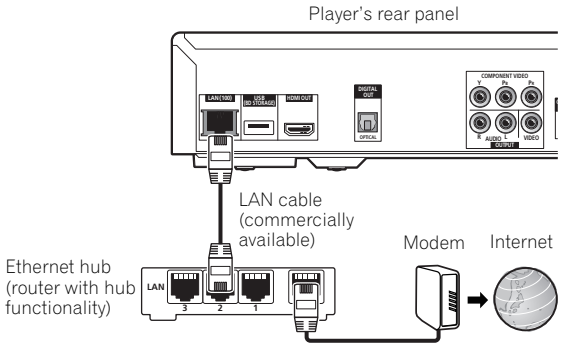
Network connection

BD-LIVE functions such as downloading movie trailers or additional audio and subtitle languages and playing on-line games can be enjoyed over the Internet. The player's software can also be updated over the Internet (page 44). Connect an Ethernet hub (or a router with hub functionality) that is connected to the Internet to the player.

Be sure to use a 100BASE-TX compatible Ethernet hub or router.

Connecting via an Ethernet hub

The player can be connected to an Ethernet hub using a LAN cable.

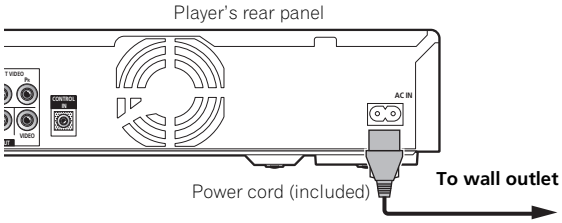


Note

- **LAN** on the player's front panel display lights when there is an active local area network (LAN) connection (page 12).
- If there is an available DHCP server in your local area network, the IP address is obtained automatically. Otherwise, set IP address manually (page 41).
- For some Internet service providers, you may have to set the individual network configuration manually. In this case, see page 41.
- Pioneer is not responsible for any malfunction of the player due to communication error/malfunctions associated with your network connection and/or your connected equipment. Please contact your Internet service provider or network device manufacturer.

Connecting the power cord

Connect the power cord after all the connections between devices have been completed.



Chapter 3
Getting Started

Making settings using the Setup Navigator menu

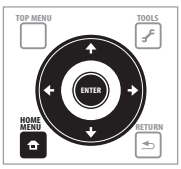
Be sure to perform these settings when using the player for the first time.

Caution

- Before turning on the power, check that the connections between the player and other devices are correct. Also, turn on the power of the devices connected to the player before turning on the player's power.
- When using a Pioneer Flat Screen TV or front projector compatible with the KURO LINK function, set KURO LINK to On on the connected device before turning on the player's power.
- The screen in step 10 and test tones are output simultaneously according to the settings in steps 4 to 7. Lower the volume of the devices connected with the player.

Note

- When a Pioneer Flat Screen TV or front projector compatible with the KURO LINK function is connected to the player using an HDMI cable, the player is automatically set to the optimum picture quality for the connected device.



1 Turn on the TV's power and switch the input.
See the TV's operating instructions for instructions on operating the TV.

2 Turn on the player's power.
Press ⏻ **STANDBY/ON**.

Check that the **Setup Navigator** menu is displayed.

❖ If the Setup Navigator menu is not displayed

▶ Press HOME MENU to display the Home Menu, select Initial Setup → Setup Navigator → Start, then press ENTER.

3 Select the OSD language.
Use ⬆/⬇ to select, then press **ENTER**.

Example (U.K. models):

Setup Navigator
BD PLAYER
Please select the on-screen display language.

English
français
Deutsch
Italiano
Español
Русский

Audio, subtitle and BDMV/DVD-Video menu language will also be set.

When a Pioneer Flat Screen TV that is compatible with KURO LINK is connected to this player's **HDMI OUT** terminal, language settings are imported from the Pioneer Flat Screen TV's language settings before **Setup Navigator** begins.

4 Select and set the video and audio output terminals.
Select the actually connected video and audio output terminals.

Use ⬆/⬇/⬅/➡ to select, then press **ENTER**.

Setting item		Output terminal name	
Video	HDMI	HDMI OUT	
	COMPONENT VIDEO	VIDEO OUT	COMPONENT VIDEO
	VIDEO		VIDEO
Audio	HDMI	HDMI OUT	
	DIGITAL AUDIO	DIGITAL OUT	
	ANALOG AUDIO	AUDIO OUT	

Caution

- When **HDMI** is selected for **Video**, no video signals are output from the **COMPONENT VIDEO** or **VIDEO** output terminals.
- When **COMPONENT VIDEO** or **VIDEO** is selected at **Video**, no video signals are output from the **HDMI OUT** terminal.
- The video and audio signals output from the set output terminals are output synchronously (lip synchronization).
- When **COMPONENT VIDEO** or **VIDEO** is selected at **Video**, no sound is output if **HDMI** is selected at **Audio**.
  Follow the procedure below to redo the connections, then select the proper connection at the setup screen.
  – When connecting using component video cables or a video cable to watch the picture, connect to an AV receiver or amplifier, or a TV using either analog audio cables, an optical digital audio cable (page 16).

– To listen to audio with the player connected to an AV receiver or amplifier with an HDMI cable, connect the TV to the AV receiver or amplifier using an HDMI cable (page 15).

- When **HDMI** or **DIGITAL AUDIO** is selected at **Audio**, linear PCM audio signals (2 channels) are output from all terminals other than the ones selected at **Audio**.
- When **ANALOG AUDIO** is selected at **Audio**, no audio signals are output from the **HDMI OUT** or **DIGITAL OUT** terminals.

For steps 5 to 7, the step to which you should proceed depends on the combination of the Video and Audio settings.

5 Select and set the HDMI High Speed Transmission setting for the HDMI OUT terminal.
Use ←/→ to select, then press **ENTER**.

When **HDMI High Speed Transmission** for the **HDMI OUT** terminal is set to **On**, use a High Speed HDMI™ cable. The picture and sound may not be output properly if any other HDMI cable (for example a standard HDMI™ cable) or an HDMI cable with built-in equalizer is used.

6 Select the output video resolution from the COMPONENT VIDEO output terminals.
Use ↑/↓ to select, then press **ENTER**.

For details on the resolution settings, see *Switching the output video resolution* on page 21.

7 Select the aspect ratio of your TV.
Use ↑/↓ to select, then press **ENTER**.

8 Check the settings.
Select **Proceed**, then press **ENTER**.

9 Output test tones.
Use ←/→ to select **Yes**, then press **ENTER**.

10 Finish the Setup Navigator menu.
Use ←/→ to select **Finish**, then press **ENTER**.

To redo the settings from the start, select **Go Back**.

Depending on the output terminal setting of step 4 or the HDMI cable being used, it may happen that no picture and/or sound is output. If this happens, the setup returns to step 4 if there is no operation for over 30 seconds. Once the setup returns to step 4, redo the settings according to the connected devices and the HDMI cable being used.

11 Checking the picture quality settings or setting the picture quality
If a Pioneer Flat Screen TV or projector is connected to the player and **HDMI** is selected for **Video** in step 4, the player sets the picture quality automatically. The automatic picture quality setting screen appears. Press **ENTER**.

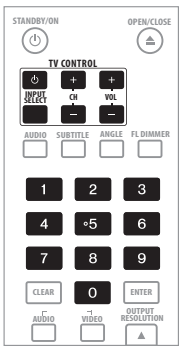
When the automatic picture quality setting screen does not appear, the manual picture quality setting screen appears. Use ↑/↓ to select the connected component, then press **ENTER**.

Operating the TV with the player's remote control

When the manufacturer code for your brand of TV is set on the player's remote control, the TV can be operated using the player's remote control.

Caution

- For some models it may not be possible to operate the TV with the player's remote control, even for TVs of brands listed on the manufacturer code list.
- The setting may be restored to the default after the batteries are replaced. If this happens, reset it.



1 Input the 2-digit manufacturer code.
Press the number buttons (0 to 9) to input the code while pressing **TV CONTROL** ⏻.

Note

- The factory setting is 00 (PIONEER).
- If you make a mistake when inputting the code, release **TV CONTROL** ⏻ then start over from the beginning.
- When there are multiple codes for a manufacturer, try inputting them in the indicated order until the TV can be operated.

2 Check that the TV can be operated.
Operate the TV using **TV CONTROL**.

⏻ – Press to turn the TV's power on and off.

INPUT SELECT – Press to switch the TV's input.

CH +/– – Press to select the TV channel.

VOL +/– – Press to adjust the volume.

TV Preset code list

Manufacturer Code(s)

PIONEER 00, 31, 32, 07, 36, 42, 51, 22
ACURA 44
ADMIRAL 31
AIWA 60
AKAI 32, 35, 42
AKURA 41
ALBA 07, 39, 41, 44
AMSTRAD 42, 44, 47
ANITECH 44
ASA 45
ASUKA 41
AUDIOGONIC 07, 36
BASIC LINE 41, 44
BAUR 31, 07, 42
BEKO 38
BEON 07
BLAUPUNKT 31
BLUE SKY 41
BLUE STAR 18
BPL 18
BRANDT 36
BTC 41
BUSH 07, 41, 42, 44, 47, 56
CASCADE 44
CATHAY 07
CENTURION 07
CGB 42
CIMLINE 44
CLARIVOX 07
CLATRONIC 38
CONDOR 38
CONTEC 44
CROSLEY 32
CROWN 38, 44
CRYSTAL 42
CYBERTRON 41
DAEWOO 07, 44, 56
DAINICHI 41
DANSAI 07
DAYTON 44
DECCA 07, 48
DIXI 07, 44
DUMONT 53
ELIN 07
ELITE 41
ELTA 44
EMERSON 42
ERRES 07
FERGUSON 07, 36, 51
FINLANDIA 35, 43, 54
FINLUX 32, 07, 45, 48, 53, 54
FIRSTLINE 40, 44
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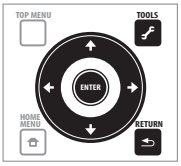
Using the TOOLS menu

Various functions can be called out according to the player's operating status.



1 Display the TOOLS menu.

Press **TOOLS**.

2 Select and set the item.

Use ⬆/⬇ to select, then press **ENTER**.

Note

- Items that cannot be changed are displayed in gray. The items that can be selected depend on the player's status.

❖ To change the setting of the selected item

Use ⬅/➡ to change.

❖ To close the TOOLS menu

Press **TOOLS** or **RETURN**.

❖ TOOLS menu item list

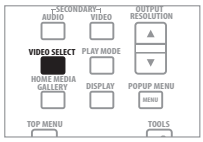
Item	Description
Play from Beginning	Play the selected title, track or file from the start.
Slideshow	Play a slideshow of the image files on the selected disc or folder.
Play Mode	Display the Play Mode screen (page 28).
Video Adjust	Display the picture quality adjustment screen (page 34).
Secondary Video	Switch the BD-ROM's secondary video (Picture-in-Picture) (page 26).
Subtitle	Switch the subtitles (page 25).
Angle	Switch the BD-ROM/DVD-Video disc's camera angles (page 25).
Rotate	Rotate the image while playing a slideshow (page 32).
Audio Adjust	Display the audio adjustment menu (page 35).
Audio	Switch the audio (page 26).
Secondary Audio	Switch the BD-ROM's secondary audio (page 26).
Now Playing	Display the playback screen of the currently playing track or file.
Original/Play List	Switch the DVD-R/-RW's (VR format) list screen between the original list and the playlist.
Add to HMG Playlist	Add the selected track or file to the HMG Playlist (page 32).
Delete from HMG Playlist	Delete the selected track or file from the HMG Playlist (page 33).
Output Video Resolution	Switch the output video resolution from the various output terminals (page 21).

Switching the video output terminal to be viewed

Use the procedure below to switch the video output signal to be viewed between the **HDMI OUT** terminal and an analog output terminal (**COMPONENT VIDEO** or **VIDEO** output terminals).

Caution

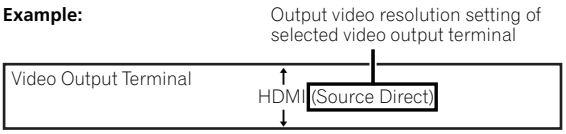
- The picture may not be displayed for a while when the video output terminal is switched.
- When the **HDMI OUT** terminal is selected, no video signals are output from the other video output terminals.
- When a video output terminal other than the **HDMI OUT** terminal is selected, no audio and video signals are output from the **HDMI OUT** terminal.



▶ **Press VIDEO SELECT.**

- The current video output terminal is displayed on the TV screen and on the player's front panel display. To switch the video output terminals, press ⬆/⬇.

Example:



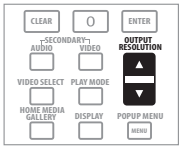
- The video output terminal setting can also be switched by pressing ⏮ ◀◀ /▶▶ ⏭ on the player's front panel.

Switching the output video resolution

Use the procedure below to switch the output video resolution from the various video output terminals.

Caution

- On some devices (TV, AV receiver or amplifier, etc.), the video or audio may not be output properly when the resolution is switched. If this happens, use **OUTPUT RESOLUTION** to set a resolution at which the video and audio are properly output.
- When video signals are being output with a resolution of 1080/50i, 1080/50p, 720/50p, 1080/24p, 1080/60i, 1080/60p or 720/60p from the **HDMI OUT** terminal or **COMPONENT VIDEO** output terminals, the picture may be output with an aspect ratio of 16:9, even if the **TV Aspect Ratio** is set to **4:3 (Standard)**.
- The picture may not be displayed for a while when the resolution is switched.

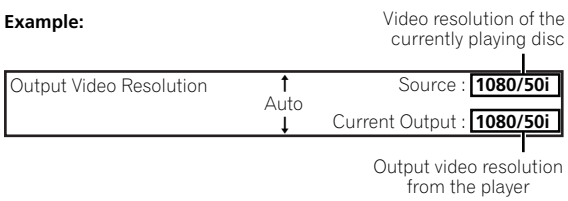


▶ **Press OUTPUT RESOLUTION.**

- The current output video resolution setting is displayed on the TV screen and on the player's front panel display.
  To switch the output video resolution, press **OUTPUT RESOLUTION** again or press ⬆/⬇.

- The output video resolution depends on the video output terminal (page 23).

Example:



- The output video resolution setting can also be switched by selecting **Output Video Resolution** from the **TOOLS** menu.

❖ About the frame/field frequency and NTSC/PAL TV systems

U.K., Australia and New Zealand models: By factory default setting, the frame/field frequency is set for an output of 50 Hz, and the video signal output from the **VIDEO** output terminals is set to be output in the PAL TV system format. When sources with a frame/field frequency of 60 or 24 Hz are played, the output frame/field frequency automatically switches to 60 Hz (or 24 Hz for HDMI, depending on the setting), and the TV system format for the video signal output from the **VIDEO** output terminals depends on the **NTSC on PAL TV** setting.

Others: By factory default setting, the frame/field frequency is set for an output of 60 Hz, and the TV system format for the video signal output from the **VIDEO** output terminals depends on the **NTSC on PAL TV** setting. When sources with a frame/field frequency of 50 Hz are played, the output frame/field frequency automatically switches to 50 Hz, and the video signal output from the **VIDEO** output terminals is set to be output in the PAL TV system format.

When playback is stopped, the frame/field frequency and TV system settings remain at the settings last used. The frame/field frequency and TV system settings do not change even when the power is turned off. They only switch when a video material with a different frame/field frequency is played.

If the picture is not displayed on the TV when a source with a different frame/field frequency is played, use the procedure below to switch the frame/field frequency and TV system settings for the signal output from the player.

Eject the disc, then press the ⏏ **OPEN/CLOSE** button on the front panel while pressing the ▶ button to switch to a different frame/field frequency. The frame/field frequency switches between 50 Hz and 60 Hz each time this operation is performed. The indicator for the frame frequency's current setting lights on the front panel display (page 12).

❖ About Film material

The film material is a video signal with a frame rate of 24 frames/second. For example, these materials include 1080/24p, 720/24p, etc.

❖ To output film material

To output 1080/24p film material from **HDMI OUT** terminal, set the output video resolution to either **Auto** or **Source Direct**.

⚠ Caution

- 1080/24p signals can only be output from the **HDMI OUT** terminal. They cannot be output from other video terminals.
- When **Auto** is selected, the picture is output at 60 frames/second if your TV is not compatible with 1080/24p signals.
- When **Source Direct** is selected, the signals are output as such, even if your TV is not compatible with 1080/24p signals. If the picture is not displayed properly, use **OUTPUT RESOLUTION** to set an output video resolution at which the video and audio signals are properly output.
- Even if **Auto** or **Source Direct** is selected, 720/24p video signals are output at 60 frames/second.

❖ About the output video resolution

The output video resolution setting and the resolution of the picture that is actually output differ for the different terminals. See the table below. The table below shows the output video resolution for the different terminals when the frame/field frequency of the playback source is 50 Hz on the upper line, the resolutions when the source's frame/field frequency is 60 Hz and 24 Hz on the lower line.

Output video resolution setting	HDMI[1]		COMPONENT VIDEO/VIDEO[1]			
	HDMI OUT terminal	COMPONENT VIDEO/VIDEO output terminals	HDMI OUT terminal	COMPONENT VIDEO output terminals[2]	VIDEO output terminal[2]	(TV system)
Auto[3]	Resolution preferred by TV[4,5,6]	No video signals are output	No video signals are output	—	—	—
576i or 480i	576/50i			576/50i	576/50i	PAL
	480/60i			480/60i	480/60i	✱[7]
576p or 480p	576/50p			576/50p	576/50i	PAL
	480/60p			480/60p	480/60i	✱[7]
1080i	1080/50i			576/50p	576/50i	PAL
	1080/60i			1080/60i[8,9]	480/60i	✱[7]
1080p[3]	1080/50p[10,11]			—	—	—
	1080/60p[10,11]					
Source Direct	Resolution recorded on disc[5,12,13]			Resolution recorded on disc[9,12,13,14]	576/50i	PAL
					480/60i	✱[7]

1. The video output terminal set at **Video** in the **Setup Navigator** (page 18) or the video output terminal selected with **VIDEO SELECT** (page 21).
2. Depending on the BD, the pictures may not be output.
3. This cannot be selected when the video output terminal is set to **COMPONENT VIDEO**/**VIDEO**.
4. The pictures are output with the preferred output resolution of the device (TV, AV receiver or amplifier, etc.) connected to **HDMI OUT** terminal.
5. For details on the output of film material (1080/24p or 720/24p video signals), see *To output film material* on page 22.
6. Sources with a resolution of 720/50p, 720/60p and 720/24p are output at 1080/50i or 1080/60i even if the TV's recommended resolution is 1080/50p or 1080/60p.
7. Depends on the **NTSC on PAL TV** setting (page 37).
8. DVD-Video or DVD-R/-RW (VR format) may be output at 480/60p.
9. BD-ROM or BD-R/-RE may be output at 480/60p.
10. Depending on the connected HDMI cable, the video signals may not be output.
11. Sources with a resolution of 720/50p, 720/60p and 720/24p are output at 1080/50i or 1080/60i.
12. Depending on the connected TV, the video signals may not be output.
13. 720/24p film material is output at 720/60p.
14. 1080/24p film material is output at 1080/60i.

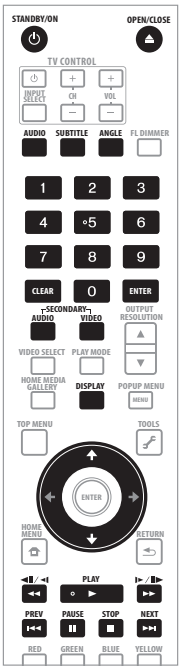
Chapter 4

Playback

Playing discs or files

This section describes the player's main operations.

For the types of discs that can be played, see *Playable discs* on page 7. For the types of files that can be played, see *Playable files* on page 9. Video, image and audio files recorded on discs are played with the Home Media Gallery (page 31).



1 Press ⏻ STANDBY/ON to turn on the power.

Turn the TV's power on and switch its input beforehand.

2 Press ⏏ OPEN/CLOSE to open the disc tray and load the disc.

Note

- Load the disc with the printed side facing up.
- Several dozen seconds are required to read the disc. Once reading is completed, the type of disc is displayed on the player's front panel display.

3 Press ► PLAY to play the disc.

► on the player's front panel display lights during playback.

- To pause, press **II PAUSE** during playback. **II** on the player's front panel display lights when playback is paused.
- To stop, press ■ **STOP** during playback.

Note

- Some discs start playing automatically when the disc tray is closed.
- DVD-Video discs have parental lock features. Input the password registered in the player's settings to unlock the parental lock. For details, see page 43.
- For some BD-R/-RE, playback protection is set for the disc or titles. Input the code number set for the disc to unlock the protection.
- Check *Troubleshooting* on page 55 if video or audio signals are not being output properly.

❖ If the disc menu is displayed

For some discs, the disc menu is displayed automatically when playback starts. The contents of the disc menu and the way to operate differ from disc to disc.

❖ Resuming playback from where it was stopped (resume playback function)

- When ■ **STOP** is pressed during playback, the point at which the disc stopped is stored in the memory. When ► **PLAY** is pressed, playback resumes from that point.
- For audio CDs and audio files, playback starts from the beginning of the track/file that was playing.
- If the stop mode was set while playing a slideshow of image files, playback starts from the image file last displayed.
- To cancel the resume playback function, press ■ **STOP** while playback is stopped.

Note

- The resume playback function is canceled automatically in the following cases:
  - When the disc tray is opened.
  - When the file list window is switched.
  - When the power is turned off. (For BDs and DVDs this does not cancel the resume playback function.)
- The resume playback function cannot be used for some discs.

Forward and reverse scanning

▶ **During playback, press ◄◄ or ►►.**

- The scanning speed switches each time the button is pressed. The speed steps depend on the disc or file (the speed is displayed on the TV screen).
- Forward or reverse scanning is also possible by holding the button down. Normal playback resumes when the button is released.

❖ To resume normal playback

▶ **Press ► PLAY.**

Playing specific titles, chapters or tracks

▶ **Input the number of the title, chapter or track you want to play.**

- Use the number buttons (0 to 9) to input the number, then press **ENTER**.
- Press **CLEAR** to clear the values you have input.

Skipping content

▶ **Press I◄◄ PREV or ►►I NEXT.**

- When **►►I NEXT** is pressed, the playback skips ahead to the beginning of the next title/chapter/track/file.
- When **I◄◄ PREV** is pressed, the playback skips back to the beginning of the currently playing title/chapter/track/file. Press twice to skip back to the beginning of the previous title/chapter/track/file.

Playing in slow motion

▶ **While playback is paused, press and hold ◄II/◄I or I►/II►.**

- The speed switches each time the button is pressed (the speed is displayed on the TV screen). The speed steps depend on the disc or file.

❖ To resume normal playback

▶ **Press ► PLAY.**

Step forward and step reverse

▶ **While playback is paused, press ◄II/◄I or I►/II►.**

- The picture moves a step forward or reverse each time the button is pressed.

❖ To resume normal playback

▶ **Press ► PLAY.**

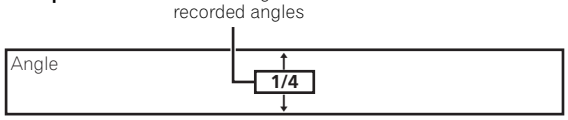
Switching the camera angles

For BD-ROM and DVD-Video discs on which multiple angles are recorded, the angles can be switched during playback.

▶ **During playback, press ANGLE.**

- The current angle and total number of recorded angles are displayed on the TV screen and on the player's front panel display.
  To switch the angles, press **ANGLE** again or press ⬆/⬇.

Example:



- The angles can also be switched by selecting **Angle** from the **TOOLS** menu.
- If the angles are not switched when **ANGLE** is pressed, switch them from the menu screen.

Switching the subtitles

For discs or files on which multiple subtitles are recorded, the subtitles can be switched during playback.

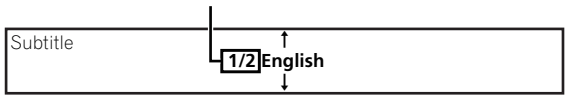
⚠ Caution

- The subtitles cannot be switched for discs recorded on a DVD or BD recorder. Also refer to the operating instructions of the device used for recording.

▶ **During playback, press SUBTITLE.**

- The current subtitle and total number of recorded subtitles are displayed on the TV screen and on the player's front panel display.
  To switch the subtitle, press **SUBTITLE** again or press ⬆/⬇.

Example:



- The subtitles can also be switched by selecting **Subtitle** from the **TOOLS** menu.
- If the subtitles are not switched when **SUBTITLE** is pressed, switch them from the menu screen.

❖ Turning the subtitles off

▶ **Press SUBTITLE, then press CLEAR.**

❖ About displaying external subtitle files while playing DivX media files

In addition to the subtitles recorded in DivX media files, this player also supports the display of external subtitle files. If a file has the same name as a DivX media file aside from the file extension and the extension is one of the extensions listed below, the file is treated as an external subtitle file. Note that DivX media files and external

subtitle files must be located in the same folder. Only one external subtitle file can be displayed on this player. Use a computer, etc., to delete any external subtitle files you do not want to display from the disc.

.srt, .sub, .txt, .smi, .ssa, .ass

If the language code is specified for the external subtitle file, the subtitles are displayed with the font corresponding to that language code. If no language code is specified, the subtitles are displayed with the font corresponding to the language code set at **Subtitle Language** (page 39). The same font is used for the all the languages in each of the groups below.

Group 1	Afrikaans(af/afr), Basque(eu/eus), Catalan(ca/cat), Danish(da/dan), Dutch(nl/nld), English(en/eng), Faroese(fo/fao), Finnish(fi/fin), French(fr/fra), Galician(gl/glg), German(de/deu), Guarani(gn/grn), Icelandic(is/isl), Irish(ga/gle), Italian(it/ita), Latin(la/lat), Norwegian(no/nor), Portuguese(pt/por), Rhaeto-Romance(rm/roh), Scots-Gaelic(gd/gla), Spanish(es/spa), Swahili(sw/swa), Swedish(sv/swe), Zulu(zu/zul)
Group 2	Albanian(sq/sqi), Croatian(hr/hrv), Czech(cs/ces), Hungarian(hu/hun), Polish(pl/pol), Romanian(ro/ron), Slovak(sk/slk), Slovenian(sl/slv)
Group 3	Belarusian(be/bel), Bulgarian(bg/bul), Macedonian(mk/mkd), Moldavian(mo/mol), Russian(ru/rus), Serbian(sr/srp), Ukrainian(uk/ukr)
Group 4	Greek(el/ell)
Group 5	Estonian(et/est), Kurdish(ku/kur), Turkish(tr/tur)

Note

- Depending on the file, the external subtitles may not be displayed properly.

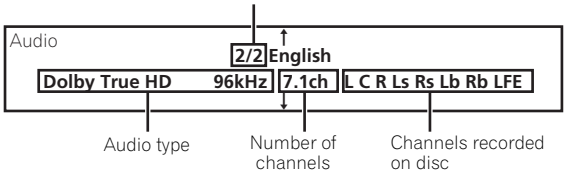
Switching the audio and secondary audio

For discs or files on which multiple audio streams/channels are recorded, audio streams/channels can be switched during playback. Also use this procedure to switch the secondary audio for BD-ROMs on which secondary audio is recorded.

▶ **During playback, press AUDIO.**

- The current audio and total number of recorded audio streams are displayed on the TV screen and on the player's front panel display.
  To switch the audio, press **AUDIO** again or press ⬆/⬇.
- To switch the secondary audio, press **SECONDARY AUDIO**.

Example: Current audio/Total number of recorded audio streams



- The audio/secondary audio can also be switched by selecting **Audio** or **Secondary Audio** from the **TOOLS** menu.
- If the audio/secondary audio is not switched when **AUDIO**/**SECONDARY AUDIO** is pressed, switch it from the menu screen.

❖ Turning the Secondary Audio off

▶ **Press SECONDARY AUDIO, then press CLEAR.**

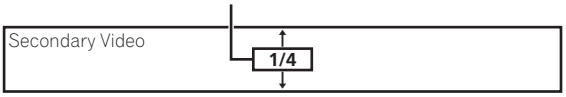
Switching the secondary video

Use the procedure below to switch the secondary video (Picture-in-Picture) recorded on the BD-ROM.

▶ **During playback, press SECONDARY VIDEO.**

- The current secondary video and total number of recorded secondary video streams are displayed on the TV screen and on the player's front panel display.
  To switch the secondary video, press **SECONDARY VIDEO** again or press ⬆/⬇.

Example: Current secondary video/Total number of recorded secondary video streams



- The secondary video can also be switched by selecting **Secondary Video** from the **TOOLS** menu.
- If the secondary video is not switched when **SECONDARY VIDEO** is pressed, switch it from the menu screen.

❖ Turning the Secondary Video off

▶ **Press SECONDARY VIDEO, then press CLEAR.**

Displaying the disc information

▶ **Press DISPLAY.**

The disc information appears on the TV screen. The information switches each time the button is pressed.

The information display differs during playback and when playback is stopped.

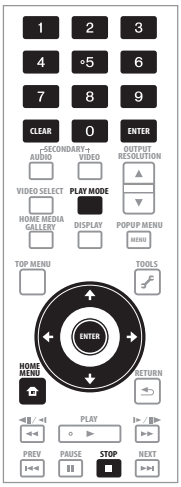
Playback functions

The functions that can be used differ according to the type of disc and file. In some cases, some of the functions cannot be used. Check the usable functions on the table below.

Function[1]	Disc/file type								
	BD-ROM	BD-R /-RE	DVD-Video	DVD-R /-RW (VR format)	AVCHD	Video file	Image file	Audio file	Audio CD
Forward and reverse scanning[2]	✓[3]	✓[3]	✓[3]	✓[3]	✓[3]	✓[3]	✗	✓[4]	✓[4]
Playing specific titles, chapters or tracks	✓	✓	✓	✓	✓	✗	✗	✗	✓
Skipping content	✓	✓	✓	✓	✓	✓	✓	✓	✓
Playing in slow motion[2,5]	✓	✓	✓	✓	✓	✓[6]	✗	✗	✗
Step forward and step reverse[2]	✓	✓	✓	✓	✓	✓[7]	✗	✗	✗
Switching the camera angles[8]	✓	✗	✓	✗	✗	✗	✗	✗	✗
Switching the subtitles[9]	✓	✓	✓	✓	✓	✓	✗	✗	✗
Switching the audio[10]	✓	✓	✓	✓	✓	✓	✗	✗	✓
Switching the secondary audio[11]	✓[12]	✗	✗	✗	✗	✗	✗	✗	✗
Switching the secondary video[13]	✓[14]	✗	✗	✗	✗	✗	✗	✗	✗
Displaying the disc information	✓	✓	✓	✓	✓	✓	✓	✗	✗

1. Some functions may not work for some discs or files, even if indicated [✓] on the table.
2. For some discs, normal playback resumes automatically when the chapter switches.
3. No sound is produced during forward and reverse scanning.
4. Sound is produced during forward and reverse scanning.
5. • No sound is output during slow motion playback.
   • It is not possible to switch the speed during reverse slow motion playback.
6. Reverse slow motion playback is not possible.
7. Reverse step playback is not possible.
8. Angle mark is displayed for scenes at which multiple angles are recorded if **Angle/Secondary Indicator** is set to **On** (page 39).
9. • The types of recorded subtitles depend on the disc and file.
   • In some cases the subtitle may switch or the switching screen provided on the disc may be displayed immediately, without the current subtitle or the total number of subtitles recorded on the disc being displayed.
10. The types of recorded audio streams depend on the disc and file.
11. • The types of recorded secondary audio streams depend on the disc and file.
    • In some cases the secondary audio may switch or the switching screen provided on the disc may be displayed immediately, without the current secondary audio or the total number of secondary audio streams recorded on the disc being displayed.
    • Secondary audio mark is displayed for scenes at which secondary audio is recorded if **Angle/Secondary Indicator** is set to **On** (page 39).
12. Some discs do not include secondary audio.
13. • In some cases the secondary video may switch or the switching screen provided on the disc may be displayed immediately, without the current secondary video or the total number of secondary video streams recorded on the disc being displayed.
    • Secondary video mark is displayed for scenes at which secondary video is recorded if **Angle/Secondary Indicator** is set to **On** (page 39).
14. Some discs do not include secondary video.

Using the Play Mode functions



Playing from a specific time (Time Search)

1 During playback, press PLAY MODE to display the Play Mode screen.
The Play Mode screen can also be displayed by selecting **Play Mode** from the **TOOLS** menu.

2 Select Time Search.
Use ⬆/⬇ to select, then press **ENTER**.

3 Input the time.
Use the number buttons (0 to 9) or ⬆/⬇ to input the time.

Use ⬅/➡ to move the cursor.

- To play from 45 minutes, input **0**, **0**, **4**, **5**, **0** and **0**, then press **ENTER**.
- To play from 1 hour 20 minutes, input **0**, **1**, **2**, **0**, **0** and **0**, then press **ENTER**.
- Press **CLEAR** to clear the values you have input.

4 Starting playback from the specified time.
Use ⬅/➡ to select **Search**, then press **ENTER**.

❖ Closing the Play Mode screen

Press **PLAY MODE** or **HOME MENU**.

Playing a specific title, chapter or track (Search)

1 Press PLAY MODE to display the Play Mode screen.
The Play Mode screen can also be displayed by selecting **Play Mode** from the **TOOLS** menu.

2 Select the type of search.
Use ⬆/⬇ to select, then press **ENTER**.

See the table on page 30 for the search types.

3 Input the number.
Use the number buttons (0 to 9) or ⬆/⬇ to input the number.

Use ⬅/➡ to move the cursor.

- To search for title 32, input **0**, **3** and **2**, then press **ENTER**.
- Press **CLEAR** to clear the values you have input.

4 Starting playback from the specified title, chapter or track.
Use ⬅/➡ to select **Search**, then press **ENTER**.

Playing a specific section within a title or track repeatedly (A-B Repeat)

Use this procedure to play a specific section within a title or track repeatedly.

1 During playback, press PLAY MODE to display the Play Mode screen.
The Play Mode screen can also be displayed by selecting **Play Mode** from the **TOOLS** menu.

2 Select A-B Repeat.
Use ⬆/⬇ to select, then press **ENTER**.

3 Select the starting point for A-B Repeat.
Use ⬅/➡ to select **A (Start)**, then press **ENTER**.

4 Select the end point for A-B Repeat.
Use ⬅/➡ to select **B (End)**, then press **ENTER**.

A-B Repeat playback starts.

❖ To cancel A-B Repeat play

- Select **Off** from the Repeat/Random screen, then press **ENTER**.
- During playback, press ■ **STOP** or **CLEAR**.

Note

- A-B Repeat play is canceled in the following cases:
  - When the angle is switched (for BD-ROM and DVD-Video discs only).
  - When you search outside the repeat range.
  - When you start other Repeat Play or Random Play.

Playing repeatedly (Repeat Play)

Use this procedure to play the currently playing disc, title, chapter, track or file repeatedly.

1 During playback, press PLAY MODE to display the Play Mode screen.
The Play Mode screen can also be displayed by selecting **Play Mode** from the **TOOLS** menu.

2 Select Repeat/Random.
Use ⬆/⬇ to select, then press **ENTER**.

3 Select the type of Repeat Play.
Use ⬆/⬇ to select, then press **ENTER**.

See the table on page 30 for the types of Repeat Play.

❖ To cancel Repeat Play

- Select **Off** from the Repeat/Random screen, then press **ENTER**.
- During playback, press ■ **STOP** or **CLEAR**.

Note

- The type of repeat modes depends on the disc and file being played. See the table on page 30.
- Repeat Play is canceled in the following cases:
  - When the angle is switched (for BD-ROM and DVD-Video discs only).
  - When you search outside the repeat range.
  - When you start other Repeat Play or Random Play.

Playing in random order (Random Play)

Use this procedure to play the tracks or files in random order.

1 During playback, press PLAY MODE to display the Play Mode screen.
The Play Mode screen can also be displayed by selecting **Play Mode** from the **TOOLS** menu.

2 Select Repeat/Random.
Use ⬆/⬇ to select, then press **ENTER**.

3 Select the Random Play.
Use ⬆/⬇ to select, then press **ENTER**.

❖ To cancel Random Play

- Select **Off** from the Repeat/Random screen, then press **ENTER**.
- During playback, press ■ **STOP** or **CLEAR**.

Note

- Random Play is canceled in the following cases:
  - When you use the search function.
  - When you start Repeat Play.

About Play Mode types

The functions that can be used differ according to the type of disc and file. In some cases, some of the functions cannot be used. Check the usable functions on the table below.

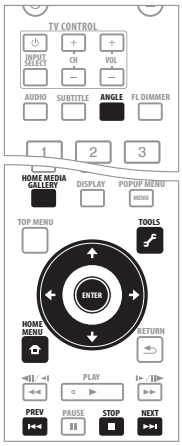
	Play Mode type	Mark[1]	Disc/file type								
			BD-ROM[2]	BD-R /-RE	DVD-Video[2]	DVD-R /-RW (VR format)	AVCHD	Video file	Image file	Audio file	Audio CD
Repeat Play	Playing a specific section within a title or track repeatedly (A-B Repeat)	A-B	✓	✓	✓	✓	✓	✓	✗	✗	✓
	Playing a title repeatedly (Title Repeat)	T	✓	✓	✓	✓	✓	✓	✗	✗	✗
	Playing a chapter repeatedly (Chapter Repeat)	C	✓	✓	✓	✓	✓	✗	✗	✗	✗
	Playing a track or file repeatedly (Track Repeat)	1	✗	✗	✗	✗	✗	✗	✗	✓	✓
	Playing all the titles, tracks or files on the disc repeatedly (All Repeat)		✗	✓	✗	✓[3]	✗	✓[4]	✓[4]	✓[5]	✓[6]
Random Play	Playing the tracks or files in random order (Random Track/File)	RDM	✗	✗	✗	✗	✗	✗	✓	✓	✓
Search	Playing from a specific time (Time Search)	—	✓	✓	✓	✓	✓	✓	✗	✗	✓
	Playing a specific title (Title Search)	—	✓	✓	✓	✓	✓	✗	✗	✗	✗
	Playing a specific chapter (Chapter Search)	—	✓	✓	✓	✓	✓	✗	✗	✗	✗
	Playing a specific track (Track Search)	—	✗	✗	✗	✗	✗	✗	✗	✗	✓

1. The type of Play Mode is indicated by the mark.
2. For BD-ROM and DVD-Video discs, some of the functions cannot be used with some titles.
3. The original titles are played repeatedly. However, the playlist titles cannot be played repeatedly.
4. The files in the folder are played repeatedly.
5. The files in the folder or HMG Playlist are played repeatedly.
6. The tracks in the disc or HMG Playlist are played repeatedly.

Playing from the Home Media Gallery

The Home Media Gallery lets you display a list of the titles, tracks or files recorded on the disc. The discs that can be played from the Home Media Gallery are as shown below (see also page 7).

- BD-R/-RE discs
- DVD-R/-RW (VR format) discs
- Audio CDs (CD-DAs and DTS-CDs)
- DVDs/CDs on which only data files of video, image or audio files, etc. are recorded

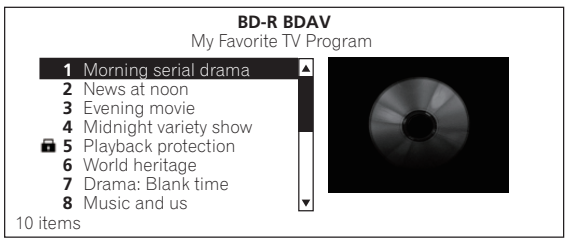


Playing discs

1 Press HOME MEDIA GALLERY to display the Home Media Gallery.
The Home Media Gallery can also be displayed by selecting **Home Media Gallery** from the Home Menu then pressing **ENTER**.

2 Select the disc.
Use ↑/↓ to select, then press **ENTER**.

3 Select the title or track to be played.
Use ↑/↓ to select, then press **ENTER**.



Playback starts.

❖ Closing the Home Media Gallery

Press **HOME MEDIA GALLERY** or **HOME MENU**.

Note

- When playing an audio CD (CD-DA or DTS-CD), the Now Playing screen is displayed.
- Some BD-R/-RE discs have playback protection. To cancel the protection, input the password set for the disc.
- To play DVD-R/-RW (VR format) playlists, switch to the playlist using the **Original/Play List** command on the **TOOLS** menu (page 20).

Playing video files

1 Press HOME MEDIA GALLERY to display the Home Media Gallery.
The Home Media Gallery can also be displayed by selecting **Home Media Gallery** from Home Menu then pressing **ENTER**.

2 Select the disc.
Use ↑/↓ to select, then press **ENTER**.

3 Select Movies.
Use ↑/↓ to select **Movies**, then press **ENTER**.

4 Select Folders or All Movies.
Use ↑/↓ to select, then press **ENTER**.

- **Folders** – The files in the selected folder are displayed.
- **All Movies** – All the recorded files are displayed.

If you have selected **All Movies**, proceed to step 6.

5 Select the folder containing the file you want to play.
Use ↑/↓ to select, then press **ENTER**.
A list of the files and folders in the selected folder is displayed.

6 Select and set the file you want to play.
Use ↑/↓ to select, then press **ENTER**.
Playback starts from the selected file, and continues until the end of the list is reached. Use ⏮/⏭ to play the previous or next file.

Note

- It may take a few seconds before playback starts. This is normal.
- It may not be possible to play some files properly.
- The number of views may be restricted (page 9).

Playing image files

1 Press HOME MEDIA GALLERY to display the Home Media Gallery.
The Home Media Gallery can also be displayed by selecting **Home Media Gallery** from the Home Menu then pressing **ENTER**.

2 Select the disc.
Use ↑/↓ to select, then press **ENTER**.

3 Select Photos.
Use ↑/↓ to select **Photos**, then press **ENTER**.

4 Select Folders or All Photos.
Use ↑/↓ to select, then press **ENTER**.

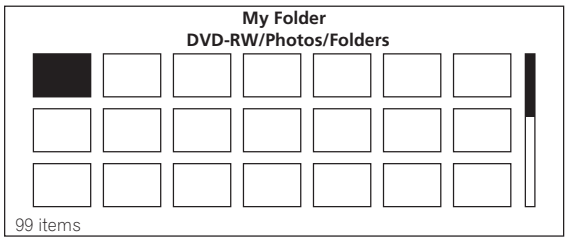
- **Folders** – The files in the selected folder are displayed.
- **All Photos** – All the recorded files are displayed.

If you have selected **All Photos**, proceed to step 6.

5 Select the folder containing the file you want to play.
Use ↑/↓/←/→ to select, then press **ENTER**.

A list of the files and folders in the selected folder is displayed.

6 Select and set the file you want to play.
Use ↑/↓/←/→ to select, then press **ENTER**.



A slideshow starts from the selected file, and continues until the end of the list is reached. Use I◄◄/►►I to display the previous or next file.

❖ About Slideshow

A display of the files on the disc or in the folder that switches automatically.

❖ Rotating images

▶ **Press ANGLE while playing a slideshow.**
• **The image rotates each time the button is pressed (90° → 180° → 270° → 0° → ...).**
The image can also be rotated by selecting **Rotate** from the **TOOLS** menu.

Playing audio files

1 Press HOME MEDIA GALLERY to display the Home Media Gallery.
The Home Media Gallery can also be displayed by selecting **Home Media Gallery** from the Home Menu then pressing **ENTER**.

2 Select the disc.
Use ↑/↓ to select, then press **ENTER**.

3 Select Music.
Use ↑/↓ to select **Music**, then press **ENTER**.

4 Select Folders or All Songs.
Use ↑/↓ to select, then press **ENTER**.

- **Folders** – The files in the selected folder are displayed.
- **All Songs** – All the recorded files are displayed.

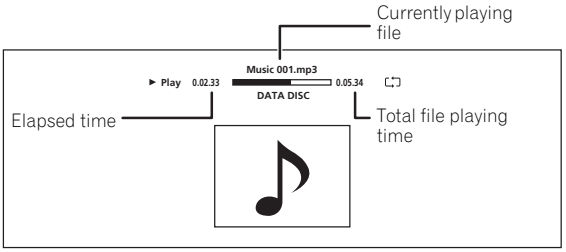
If you have selected **All Songs**, proceed to step 6.

5 Select the folder containing the file you want to play.
Use ↑/↓ to select, then press **ENTER**.

A list of the files and folders in the selected folder is displayed.

6 Select and set the file you want to play.
Use ↑/↓ to select, then press **ENTER**.

Playback starts from the selected file, and continues until the end of the list is reached. Use I◄◄/►►I to play the previous or next file. The Now Playing screen (shown below) is displayed.



Playing in the desired order (HMG Playlist)

The discs that can add tracks and files to the HMG (Home Media Gallery) Playlist are as shown below.

- Audio CDs (CD-DAs and DTS-CDs)
- DVDs/CDs on which audio files are recorded

❖ Adding tracks/files

Use this procedure to add tracks and files, and create the HMG Playlist.

1 Press HOME MEDIA GALLERY to display the Home Media Gallery.
The Home Media Gallery can also be displayed by selecting **Home Media Gallery** from the Home Menu pressing **ENTER**.

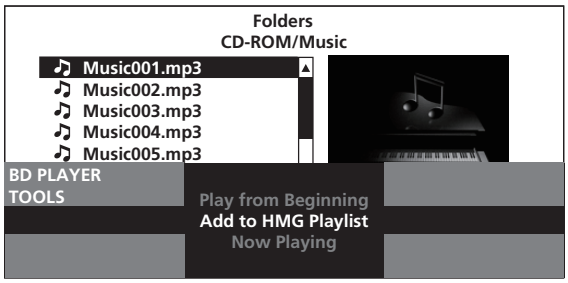
2 Select the disc.
Load the disc beforehand.

Use ↑/↓ to select, then press **ENTER**.

3 Select the track/file to be added.
Use ↑/↓ to select.

4 Press TOOLS to display the TOOLS menu.

5 Select Add to HMG Playlist.
Use ↑/↓ to select, then press **ENTER**.



The track or file selected in step 3 is added to the HMG Playlist. To add more tracks or files, repeat steps 3 to 5.

❖ To add the currently playing track/file to the HMG Playlist

1 While the track/file is playing, press TOOLS to display the TOOLS menu.

2 Use ↑/↓ to select Add to HMG Playlist, then press ENTER.

Note

- A maximum of 24 tracks/files can be added to the HMG Playlist.
- The HMG Playlist is cleared in the following cases:
  - When the power is turned off.
  - When the disc tray is opened.

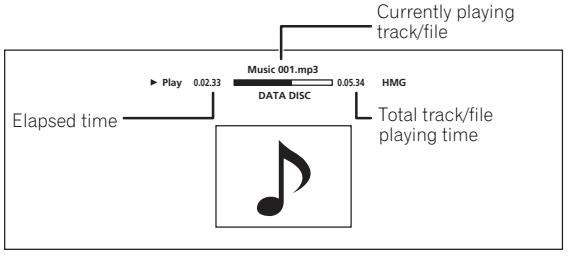
❖ Playing the HMG Playlist

1 Press HOME MEDIA GALLERY to display the Home Media Gallery.
The Home Media Gallery can also be displayed by selecting **Home Media Gallery** from the Home Menu pressing **ENTER**.

2 Select HMG Playlist.
Use ↑/↓ to select, then press **ENTER**.

3 Select the track/file to be played.
Use ↑/↓ to select, then press **ENTER**.

Playback starts from the selected track/file, and continues until the end of the list is reached. Use I◄◄/►►I to play the previous or next track/file. The Now Playing screen (shown below) is displayed.



❖ Deleting tracks/files from the HMG Playlist

1 Select the track/file to be deleted, then press TOOLS to display the TOOLS menu.

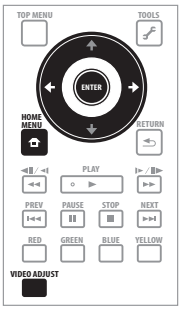
2 Use ↑/↓ to select Delete from HMG Playlist, then press ENTER.

Chapter 5

Adjusting audio and video

Adjusting the video

The quality of the playback picture can be adjusted according to the TV you are using.



1 During playback, press VIDEO ADJUST to display the Video Adjust screen.

The Video Adjust screen can also be displayed by selecting **Video Adjust** from the **TOOLS** menu.

2 Select a preset.

Select using ⬅/➡ according to the TV being used.

- **Pioneer PDP** – Select this when connected to a Pioneer plasma TV.
- **Pioneer LCD** – Select this when connected to a Pioneer liquid crystal display TV.
- **Pioneer Projector** – Select this when connected to a Pioneer front projector.
- **PDP** – Select this when connected to a plasma TV of another brand.
- **LCD** – Select this when connected to a liquid crystal display of another brand.
- **Projector** – Select this when connected to a front projector of another brand.
- **Professional** – With this setting, video signal processing is restrained. Select this when connected to a professional monitor.
- **Memory1 to 3** – Picture quality settings with adjusted parameters can be stored in the memory. For a description of the parameters, see *When Memory1, 2 or 3 is selected* below.

❖ When Memory1, 2 or 3 is selected

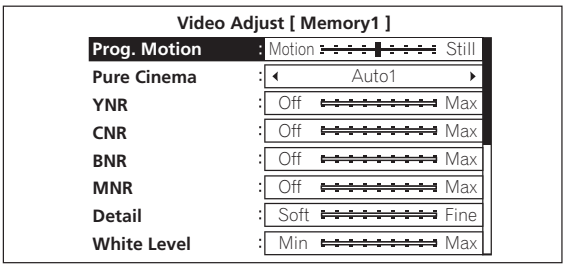
1 Select Adjustments.

Use ⬇ to select **Adjustments**, then press **ENTER**.

A detailed settings screen appears.

2 Select the item to be adjusted.

Use ⬆/⬇ to select.



3 Adjust the picture quality.

When ⬅/➡ are pressed, the adjustments can be made viewing the picture. The detailed settings screen reappears when **ENTER** is pressed.

- **Prog.Motion** – Adjust according to the type of image (moving or still image). This is effective mainly when outputting video materials as progressive images.
- **Pure Cinema** – This setting optimizes the operation of the progressive scanning circuit for playing film materials. Normally set it to **Auto1**. If the picture seems unnatural, switch this to **Auto 2**, **On** or **Off** (page 35).
- **YNR** – Reduces noise in the luminance (Y) signal.
- **CNR** – Reduces noise in the chroma (C) signal.
- **BNR** – Reduces the block noise (block-shaped distortion generated upon MPEG compression).
- **MNR** – Reduces the mosquito noise (distortion along the contours of the picture generated upon MPEG compression).
- **Detail** – Adjusts the picture's contours.
- **White Level** – Adjusts the level of the white portions.
- **Black Level** – Adjusts the level of the black portions.
- **Black Setup** – Select the black level as the setup level. Normally select **0 IRE**. If the black is too dense and all the dark colors are displayed in a uniform black due to the combination with the connected TV, select **7.5 IRE**.
- **Gamma Correction** – Adjusts how the dark portions of the picture look.
- **Hue** – Adjusts the balance between green and red.
- **Chroma Level** – Adjusts the density of the colors.

Note

- **Prog.Motion** and **Pure Cinema** have the effect only for pictures recorded in the interlaced scan format (576i/480i or 1080i signals).

- **Prog.Motion** is disabled when **Pure Cinema** is set to **On**.
- **Black Setup** has the effect only for pictures output from the **VIDEO** output terminals, and for NTSC signals output.
- **YNR**, **CNR**, **BNR** and **MNR** have no effect on 1080/24p video signals output from the **HDMI OUT** terminal.

❖ Closing the Video Adjust screen

Press **HOME MENU**.

❖ About Pure Cinema

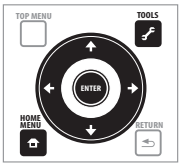
There are two types of video signals:

- **Video material** – Video signals recorded at 25 or 30 frames/second
- **Film material** – Video signals recorded at 24 frames/second

"Pure Cinema" uses signal processing suited for "film material" when converting 576i/480i or 1080i interlaced video signals into progressive video signals, resulting in clear picture reproduction without losing the quality of the material.

is displayed on the disc information screen when playing the "film material" pictures of BD-ROM, BD-R/-RE and DVD-Video discs (page 26).

Adjusting the audio



Adjusting the Audio DRC

Audio DRC (Dynamic Range Control) has the effect of playing loud sounds softly and soft sounds loudly. Adjust the setting for example when viewing movies late at night and the dialogs are difficult to hear.

1 During playback, display the TOOLS menu.

Press **TOOLS**.

2 Select and set Audio Adjust.

Use ⬆/⬇ to select, then press **ENTER**.

3 Select and set Audio DRC.

Use ⬆/⬇ to select, then press **ENTER**.

4 Adjust the setting.

Use ⬅/➡ to switch between **Off**, **Low**, **Medium**, **High** and **Auto**.

❖ Closing the Audio DRC screen

Press **ENTER** or **HOME MENU**.

Note

- This only affects the Dolby TrueHD, Dolby Digital Plus and Dolby Digital audio signals of BDs, DVDs and video files.
- When **Auto** is selected, the setting has the same effect as **High** or **Off** for Dolby TrueHD signals, depending on the content. For Dolby Digital Plus and Dolby Digital, the setting has the same effect as **Off**.
- Audio DRC affects the audio signals output from the following audio output terminals:
  - Analog audio signals output from the **AUDIO OUT** terminals.
  - Linear PCM audio signals output from the **DIGITAL OUT** terminal or **HDMI OUT** terminal.
- The effect may be weak for some discs.

Adjusting the audio delay (Lip Sync)

Adjust the audio delay for the selected video output terminal if the video and audio are not synchronized.

1 During playback, display the TOOLS menu.

Press **TOOLS**.

2 Select and set Audio Adjust.

Use ⬆/⬇ to select, then press **ENTER**.

3 Select and set Lip Sync.

Use ⬆/⬇ to select, then press **ENTER**.

4 Select Auto or Manual.

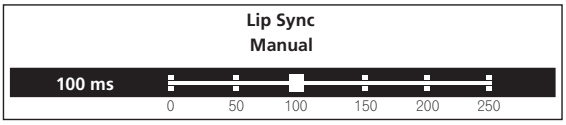
Use ⬅/➡ to select.

- **Auto** – The player automatically adjusts the timing of the video and audio when connected to a device equipped with the HDMI Auto Lipsync Correction feature using an HDMI cable.
- **Manual** – Adjust manually while viewing the video.

If you have selected **Manual**, proceed to step 5.

5 Adjusting the amount of audio delay.

Press ⬇, then use ⬅/➡ to adjust.



The audio delay can be adjusted from 0 to 250 ms in steps of 5 ms.

Note

- The **Lip Sync** adjustment is only applicable to the output terminal set at **Output Terminal** (page 43).
- The sound may be interrupted while setting the delay.

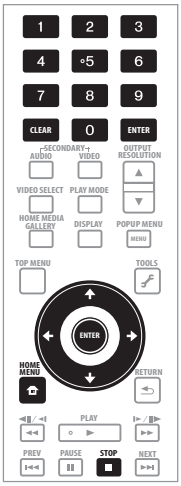
❖ Closing the Lip Sync screen

Press **ENTER** or **HOME MENU**.

Chapter 6

Advanced settings

Changing the settings



Operating the Initial Setup screen

1 When playback is stopped, display the Home Menu screen.

Press **HOME MENU**.

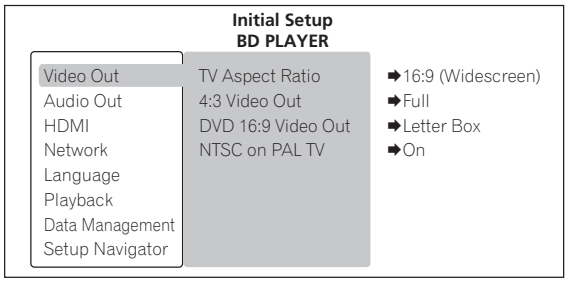
2 Select and set Initial Setup.

Use ⬆/⬇ to select, then press **ENTER**.

3 Select the item and change the setting.

Use ⬆/⬇/⬅/➡ to select, then press **ENTER**.

Example (U.K. models):



❖ Closing the Initial Setup screen

Press **HOME MENU**.

Note

- Items that cannot be changed are indicated in gray. The items that can be selected depend on the player's status.
- In Options, the factory default settings are indicated in bold.

	Setting	Options	Explanation
Video Out	TV Aspect Ratio	**16:9 (Widescreen)**	Select this when connected to a wide (16:9) TV.
		4:3 (Standard)	Select this when connected to a conventional TV.
	4:3 Video Out	**Full**	4:3 pictures are displayed over the entire screen.
		Normal	4:3 pictures are displayed with vertical black bars along the sides. Select this when you cannot switch the aspect ratio to 4:3 on the TV.
	4:3 Video Out is only valid when **TV Aspect Ratio** is set to**16:9 (Widescreen)**.		
	DVD 16:9 Video Out	**Letter Box**	16:9 pictures are displayed with black bars at the top and bottom when viewing on a 4:3 screen.
		Pan & Scan	The picture is displayed over the entire screen, with the left and right sides of the 16:9 picture cropped. Select this to view 4:3 pictures over the entire screen. For some discs, the picture will be displayed in the **Letter Box** mode even if **Pan & Scan** is set.
	• **DVD 16:9 Video Out** is only valid when **TV Aspect Ratio** is set to **4:3 (Standard)**. • **DVD 16:9 Video Out** is only valid when playing 16:9 pictures of DVD-Video or DVD-R/-RW (VR format) discs. When other 16:9 pictures are played, they are output in the **Letter Box** mode.		
	NTSC on PAL TV	On	Select this when connected to a PAL-only TV. The picture is displayed correctly on the PAL-only TV even when playing a source with a frame/field rate other than 50 Hz.
		Off	Select this when connected to an NTSC-compatible TV.
	• The factory default setting is **On** for U.K. models, **Off** for other models. • Many recent PAL TVs support the input of NTSC signals, in which case this can be set to **Off**. Also check your TV's operating instructions.		
Audio Out	Dolby Digital Out * Only valid for the **DIGITAL OUT** terminal.	**Dolby Digital 1**	Dolby Digital audio signals are output. With BD-ROMs, the secondary audio and interactive audio are mixed for output.
		Dolby Digital 2	Dolby Digital audio signals are output. With BD-ROMs, the signals are output without mixing the secondary audio and interactive audio signals.
		Dolby Digital → PCM	Select this when the connected AV receiver or amplifier, etc., is not compatible with Dolby Digital audio signals. The Dolby Digital audio signals are converted into linear PCM audio signals for output.
	DTS Out * Only valid for the **DIGITAL OUT** terminal.	**DTS 1**	DTS Digital Surround audio signals are output. With BD-ROMs, the secondary audio and interactive audio are mixed for output.
		DTS 2	DTS Digital Surround audio signals are output. With BD-ROMs, the signals are output without mixing the secondary audio and interactive audio signals.
		DTS → PCM	Select this when the connected AV receiver or amplifier, etc., is not compatible with DTS Digital Surround audio signals. The DTS Digital Surround audio signals are converted into linear PCM audio signals for output.
	AAC Out * Only valid for the **DIGITAL OUT** terminal.	AAC	Select this when the connected AV receiver or amplifier, etc., is compatible with AAC audio signals. The AAC audio signals are output.
		AAC → PCM	Select this when the connected AV receiver or amplifier, etc., is not compatible with AAC audio signals. The AAC audio signals are converted into linear PCM audio signals for output.
	DTS Downmix	**Stereo**	DTS-HD Master Audio signals, DTS-HD High Resolution Audio signals or DTS Digital Surround audio signals converted to linear PCM audio signals are converted into 2-channel (stereo) signals for output.
		Lt/Rt	DTS-HD Master Audio signals, DTS-HD High Resolution Audio signals or DTS Digital Surround audio signals converted to linear PCM audio signals are converted into 2-channel signals compatible with Dolby Surround for output (when the connected AV receiver or amplifier, etc., is compatible with Dolby Pro Logic, the AV receiver or amplifier outputs the linear PCM audio signals as surround audio signals).

	Setting	Options	Explanation
HDMI	HDMI High Speed Transmission	On	Select this when connected with a High Speed HDMI™ cable (page 13).
		Off	Select this when connected with a Standard HDMI™ cable (page 13).
	The player's setting screen is closed if the output video resolution is switched by changing the **HDMI High Speed Transmission** setting.		
	HDMI Color Space	**Auto**	Select this to automatically switch the video output between YCbCr and RGB signals according to the connected equipment.
		YCbCr 4:4:4	Select this to output the video signals as YCbCr 4:4:4 signals.
		YCbCr 4:2:2	Select this to output the video signals as YCbCr 4:2:2 signals.
		RGB (16 to 235)	Select this to output the video signals as RGB signals. Choose this if the colors seem too dense and all the dark colors are displayed in a uniform black when **RGB (0 to 255)** is selected.
		RGB (0 to 255)	Select this to output the video signals as RGB signals. Choose this if the colors seem too faint and the black seems too bright when **RGB (16 to 235)** is selected.
	Normally it is recommended to set this to **Auto**. When set to **Auto**, the optimum video signals for your TV are output.		
	HDMI Audio Out	**Auto**	The signals are output with as many audio channels as possible. In cases when the number of channels does not decrease when the signals are output as such without converting them to linear PCM, they are output as such (page 45).
		PCM	Select this when you want the secondary audio and interactive audio signals to be mixed for output or when you want to output prioritizing sampling frequency over the number of channels (page 45).
		Off	Select this when you do not want to output the audio from the HDMI output terminal.
	KURO LINK	**On**	Select this to control the player with the remote control of the AV device connected using an HDMI cable. Also refer to *About KURO LINK function* on page 14.
		Off	Select this when you do not want to control the player with the remote control of the AV device connected using an HDMI cable.
	Display Power On * Only valid when **KURO LINK** is set to **On**.	**On**	Select this when you want the TV to turn on each time playback is started or the Home Menu or Home Media Gallery is displayed on the player.
		Off	Select this when you do not want the TV to turn on each time playback is started or the Home Menu or Home Media Gallery is displayed on the player.
	Display Power Off * Only valid when **KURO LINK** is set to **On**.	**On**	Select this when you want the player's power to turn off together with the TV's power.
		Off	Select this when you do not want the player's power to turn off together with the TV's power.
	PQLS * Only valid when **KURO LINK** is set to **On**.	**Auto**	Enables PQLS function (page 14).
		Off	Disables PQLS function (page 14).
Network	IP Address	Select this to set the IP address of the player and DNS server (page 41).	
	Proxy Server	Only set the proxy server if so instructed by your Internet service provider (page 41).	
	Display Network Configuration	Select this to display a list of the network settings (page 41).	
	Connection Test	Select this to test the network connection (page 42).	

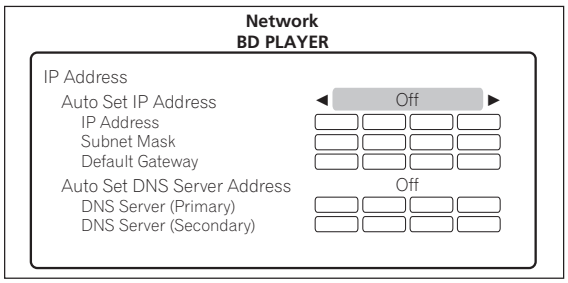
	Setting	Options	Explanation
Language	OSD Language	**English**	Select this to set the language of the on-screen displays to English.
		available languages	Choose a language for the on-screen displays from the listed languages.
	Audio Language * For some discs, it may not be possible to change to the selected language.	**English**	Select this to set both the BD-ROM and DVD-Video default audio language to English.
		available languages	Choose a language from the listed languages to set the default audio language for BD-ROM and DVD-Video playback.
		Other	Continue to the next screen to set the default audio language for BD-ROM and DVD-Video playback. You can select the language name or enter the code number (see on page 47 for the code table).
	If a language not recorded on the BD/DVD is set, one of the recorded languages is automatically selected and played.		
	Subtitle Language * For some discs, it may not be possible to change to the selected language.	**English**	Select this to set the default subtitle language for BD-ROM and DVD-Video playback to English.
		available languages	Choose a language from the listed languages to set the default subtitle language for BD-ROM and DVD-Video playback.
		Other	Continue to the next screen to set the default subtitle language for BD-ROM and DVD-Video playback. You can select the language name or enter the code number (see on page 47 for the code table).
	If a language not recorded on the BD/DVD is set, one of the recorded languages is automatically selected and played.		
	BDMV/DVD-Video Menu Lang. * For some discs, it may not be possible to change to the selected language.	**w/Subtitle Language**	Sets the language of BD-ROM and DVD-Video menus to the same as that set for the subtitle language.
		available languages	Choose a language from the listed languages to set the default language for BD-ROM and DVD-Video menus.
		Other	Continue to the next screen to set the default menu language for BD-ROM and DVD-Video menus. You can select the language name or enter the code number (see on page 47 for the code table).
	If a language not recorded on the BD/DVD is set, one of the recorded languages is automatically selected and played.		
	Subtitle Display	**On**	Select this to display the subtitles.
		Off	Select this if you do not want to display the subtitles. Note that on some discs the subtitles are displayed by force.
Playback	Still Picture	Field	This eliminates instability of the picture when playback is paused.
		Frame	This makes pictures clear when playback is paused, but instability may be observed.
		Auto	**Field** or **Frame** is switched automatically according to the disc or file being played.
	Angle/Secondary Indicator	On	Select this to display the angle mark, secondary video mark and secondary audio mark on the TV screen (pages 25 and 26).
		Off	Select this if you do not want to display the angle mark, secondary video mark and secondary audio mark on the TV screen.
	DivX VOD	Registration Code	Displays the player's registration code required to play DivX VOD files (page 9).
	Hybrid Disc Playback	**BD**	The BD layer of hybrid discs with two or more layers (BD and DVD or CD) is played.
		DVD	The DVD layer of hybrid discs with two or more layers (BD and DVD) is played. If there is no DVD layer, the BD layer is played.
		CD	The CD layer of hybrid discs with two or more layers (BD and CD) is played. If there is no CD layer, the BD layer is played.
	Remove the disc from the disc tray when changing the setting.		
	BDMV/BDAV Playback Priority	BDMV	Select this to play the BDMV format on BD-R/-RE discs containing both BDMV and BDAV formats.
		BDAV	Select this to play the BDAV format on BD-R/-RE discs containing both BDMV and BDAV formats.
	Remove the disc from the disc tray when changing the setting.		

	Setting	Options	Explanation
Data Management	Individual/Shared Data Erase	Use this to display the list of data used for the BD-LIVE and BONUSVIEW functions and to erase the data (page 42).	
	Remove the disc from the disc tray when changing the setting.		
	Application Data Erase	Use this to erase bookmarks, high scores of games and other data (page 42).	
	Remove the disc from the disc tray when changing the setting.		
	Storage Format	Select this to format the storage device on which the data used by the BD-LIVE and BONUSVIEW functions is stored (page 42).	
	Remove the disc from the disc tray when changing the setting.		
Setup Navigator		Start making the settings using the Setup Navigator menu. For details, see *Making settings using the Setup Navigator menu* on page 18.	
Parental Lock	Set Password (Change Password)	Register (change) the password for parental lock settings or for unlocking to play DVD-Video with parental lock feature (page 43).	
	DVD-Video Parental Lock	Change the player's parental lock level (page 43).	
	BDMV Parental Lock	Change the restricted age (page 43).	
	Country Code	Change the Country/Area code (page 43).	
Options	Output Terminal	Set the terminals from which the player's video and audio signals are to be output (page 43).	
	On Screen Display	**On**	Select this to display the operation indicators (Play, Stop, etc.) on the TV screen.
		Off	Select this if you do not want to display the operation indicators (Play, Stop, etc.) on the TV screen.
	Screen Saver	**On**	The screen saver is automatically activated if there is no operation for over 1 minute after playback is stopped or paused. The screen saver is automatically activated if there is no operation for over 1 minute after the Home Menu or Home Media Gallery is displayed while playing a BD or DVD. With audio CDs and audio files, the screen saver is automatically activated if no button is operated for over 1 minute, even while the audio CD or audio file is playing. The screen saver turns off when an operation is performed on the player or remote control.
		Off	The screen saver is not activated.
	Auto Power Off	**On**	Select this to turn the power off automatically (the power turns off automatically if no operation is performed for over 30 minutes).
		Off	Select this if you do not want the power to turn off automatically.
	Software Update	The Software Update function can check for and download updated system software from the network server (page 44).	

❖ Setting the IP address

1 Select and set Network → IP Address → Next Screen.
Use ↑/↓ to select, then press **ENTER**.

2 Set IP address.
Use ↑/↓/←/→ to set the IP address of the player or DNS server, then press **ENTER**.



- **Auto Set IP Address**

  On – The player's IP address is obtained automatically. Select this when using a broadband router or broadband modem that has a DHCP (Dynamic Host Configuration Protocol) server function. This player's IP address will automatically be allocated from the DHCP server.

  Off – The player's IP address must be set manually. Use the number buttons (0 to 9) to input the IP address, subnet mask and default gateway.

- **Auto Set DNS Server Address**

  On – The DNS server's IP address is obtained automatically.

  Off – The DNS server's IP address must be set manually. Use the number buttons (0 to 9) to input the DNS server's IP address stipulated by your Internet service provider.

Note

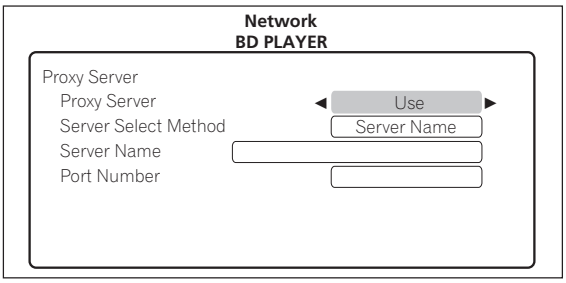
- When **Auto Set IP Address** is set to **Off**, **Auto Set DNS Server Address** is also set to **Off**.
- For information on DHCP server function, refer to the network device's operating instructions.
- You may need to contact your Internet service provider or network administrator when inputting the IP address manually.

❖ Setting the proxy server

Only set the proxy server if so instructed by your Internet service provider.

1 Select and set Network → Proxy Server → Next Screen.
Use ↑/↓ to select, then press **ENTER**.

2 Select and set Use or Not use at Proxy Server.
Use ←/→ to change, then press ↓.



- **Use** – Select this when using a proxy server.
- **Not use** – Select this when not using a proxy server.

If you have selected **Use**, proceed to step 3.

3 Select and set Server Select Method.
Use ←/→ to change, then press ↓.

- **IP Address** – Input the IP address.
- **Server Name** – Input the server name.

4 Input IP Address or Server Name.
Use the number buttons (0 to 9) to input the number if you select IP address by step 3. Use ←/→ to move the cursor.

Use the number buttons (0 to 9) to input characters if you select Server Name by step 3.

The characters that can be input for the server name are listed on the table below. Pressing a button repeatedly cycles through the characters shown.

- If you want to enter two characters in succession that are both on the same button (for example a **P** and an **R**), press → after inputting the first character then input the second character.
- Use **CLEAR** to delete the last character.
- Use ←/→ to move the displayed characters when all the input characters cannot be displayed.

Key	Characters	Key	Characters
1	1 . –	6	m n o 6
2	a b c 2	7	p q r s 7
3	d e f 3	8	t u v 8
4	g h i 4	9	w x y z 9
5	j k l 5	0	0

5 Input Port Number.
Press ↓, use the number buttons (0 to 9) to input the number.

6 Press ENTER to set.

❖ Displaying the network settings

▶ **Select and set Network → Display Network Configuration → Next Screen.**
Use ↑/↓ to select, then press **ENTER**.

The MAC address, IP address, subnet mask, default gateway and DNS server (primary and secondary) settings are displayed.

When **Auto Set IP Address** is set to **On**, the values obtained automatically are displayed.

Note

- "0.0.0.0" is displayed when each IP address has not been set.

❖ Testing the network connection

▶ **Select and set Network → Connection Test → Start.**
Use ⬆/⬇ to select, then press **ENTER**.

"Network connection test completed successfully." is displayed once the test is completed. If any other message is displayed, check the connections and/or settings (pages 17 and 41).

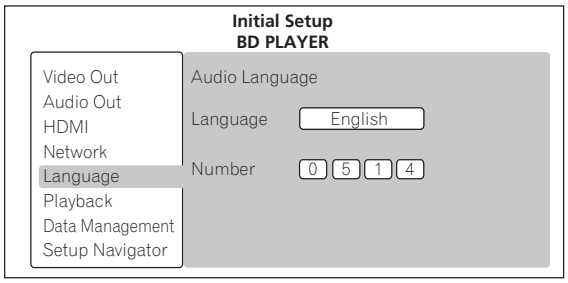
❖ Changing to other language at language setting

1 Select and set Language.
Use ⬆/⬇ to select, then press **ENTER**.

2 Select and set Audio Language, Subtitle Language or BDMV/DVD-Video Menu Lang.
Use ⬆/⬇ to select, then press **ENTER**.

3 Select and set Other.
Use ⬆/⬇ to select, then press **ENTER**.

4 Change the language.
Use ⬅/➡ to change, then press **ENTER**.



- The language can also be changed using the number buttons. Use ⬆/⬇ to move the cursor to **Number**, use the number buttons (0 to 9) to input the number, then press **ENTER**. Refer to *Language Code Table and Country/Area Code Table* on page 47.

Note

- If a language not recorded on the BD/DVD is set, one of the recorded languages is automatically selected and played.

❖ Erasing data that has been added to BDs and application data

Use this procedure to erase data that has been added to BDs (data downloaded with the BD-LIVE function and data used with the BONUSVIEW function) and application data.

Caution

- Some time is required to erase the data.
- Do not unplug the power cord while data is being erased.
- This operation does not work when a disc is loaded.

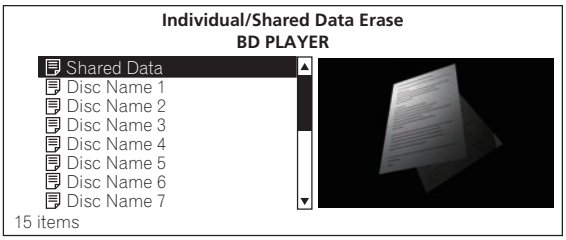
1 Select and set Data Management.
Use ⬆/⬇ to select, then press **ENTER**.

2 Select and set the erase menu.
Use ⬆/⬇ to select, then press **ENTER**.

- **Individual/Shared Data Erase**

  Use this procedure to select and erase data downloaded with the BD-LIVE function and data used with the BONUSVIEW function (page 8).

  Select **Next Screen**, then press **ENTER**. The list screen appears.



  When a disc name is selected, the data downloaded with the BD-LIVE function and data used with the BONUSVIEW is erased.

  When **Shared Data** is selected, all the data downloaded with the BD-LIVE function and not associated to discs is erased.

  Use ⬆/⬇ to select the data to be erased, then press **ENTER**.

- **Application Data Erase**

  Use this procedure to erase BD-ROM application data (high scores of games, bookmarks data, etc.).

  Select **Start**, then press **ENTER**.

- **Storage Format**

  Use this procedure to format the storage in which the data downloaded with the BD-LIVE function and data used with the BONUSVIEW function is stored (page 8).

  When this is done, all the data on the external storage device is erased.

  Select **Start**, then press **ENTER**.

3 Select Yes, then press ENTER.
Use ⬅/➡ to select, then press **ENTER**.

❖ Registering or Changing the password

Use this procedure to register or change the code number required for the Parental Lock settings.

1 Select and set Parental Lock → Set Password → Next Screen.
Use ↑/↓ to select, then press **ENTER**.

2 Input the password.
Use the number buttons (0 to 9) or ↑/↓ to input the number, then press **ENTER** to set.

Use ←/→ to move the cursor.

3 Re-input the password.
Use the number buttons (0 to 9) or ↑/↓ to input the number, then press **ENTER** to set.

Use ←/→ to move the cursor.

- To change the password, input the previously registered password, then input the new password.

Note

- We recommend making a note of the password.
- If you forget the password, reset the player to the factory default setting, then register the password again (page 44).

❖ Changing the Parental Lock level for viewing DVDs

Some DVD-Video discs containing scenes of violence, for example, have Parental Lock levels (check the indications on the disc's jacket or elsewhere). To restrict viewing these discs, set the player's level to the level lower than the discs.

1 Select and set Parental Lock → DVD-Video Parental Lock → Next Screen.
Use ↑/↓ to select, then press **ENTER**.

2 Input the password.
Use the number buttons (0 to 9) or ↑/↓ to input the number, then press **ENTER** to set.

Use ←/→ to move the cursor.

3 Change the level.
Use ←/→ to change, then press **ENTER** to set.

Note

- The level can be set to **Off** or between **Level1** and **Level8**. When set to **Off**, viewing is not restricted.

❖ Changing the Age Restriction for viewing BD-ROMs

For BD-ROMs containing scenes of violence, for example, viewing can be restricted by setting an age restriction for the BD-ROMs.

1 Select and set Parental Lock → BDMV Parental Lock → Next Screen.
Use ↑/↓ to select, then press **ENTER**.

2 Input the password.
Use the number buttons (0 to 9) or ↑/↓ to input the number, then press **ENTER** to set.

Use ←/→ to move the cursor.

3 Change the age.
Use the number buttons (0 to 9) or ↑/↓ to input the number, then press **ENTER** to set.

Use ←/→ to move the cursor.

Note

- When **Age Restriction** is set to **255**, viewing is not restricted.

❖ Changing the Country/Area code

1 Select and set Parental Lock → Country Code → Next Screen.
Use ↑/↓ to select, then press **ENTER**.

2 Input the password.
Use the number buttons (0 to 9) or ↑/↓ to input the number, then press **ENTER** to set.

Use ←/→ to move the cursor.

3 Change the country/area code.
Use ←/→ to change, then press **ENTER** to set.

- The the country/area code can also be changed using the number buttons. Use ↑/↓ to move the cursor to **Number**, use the number buttons (0 to 9) to input the number, then press **ENTER**. Refer to *Language Code Table and Country/Area Code Table* on page 47.

❖ Setting the output terminals

Set the terminals from which the player's video and audio signals are to be output.

1 Select and set Options → Output Terminal → Next Screen.
Use ↑/↓ to select, then press **ENTER**.

2 Select and set the video and audio output terminals.
Select the actually connected video and audio output terminals.

Use ↑/↓/←/→ to select, then press **ENTER**.

For details on the settings, refer to step 4 on page 18.

When **COMPONENT VIDEO** or **VIDEO** is selected for **Video**, no sound is output from the **HDMI OUT** terminal (a warning message is displayed).

Software updating

The software of the player can be updated by connecting it to the Internet using a LAN cable.

Before updating the software, make sure that you have connected the player to the network and made the necessary settings (pages 17 and 41).

Caution

- Do not unplug the power cord during software updating. Otherwise, the updating will be aborted and malfunction may occur with the player.
- There are two processes for software updating, downloading and updating. Both processes may take a certain period of time.
- Depending on the Internet connection conditions, downloading may take a long time.
- Other operations are defeated during software updating. Furthermore updating process cannot be canceled.
- When the front panel display is off, turn it on with **FL DIMMER**. When updating the player's software with the front panel display off, do not unplug the power cord until the **FL OFF** indicator turns off.

Note

- Steps **1** to **4** are the operations performed by the user (they are intended to download the software from the Internet).
- Steps **5** to **7** are the operations performed (automatically) by the player (they are intended to update the software).

1 When playback is stopped, display the Home Menu screen.

Press **HOME MENU**.

2 Select and set Initial Setup.

Use ↑/↓ to select, then press **ENTER**.

3 Select and set Options → Software Update → Start.

Use ↑/↓ to select, then press **ENTER**.

- If the player is already running the latest software, the message "The player's software is up to date and does not need updating." is displayed.

4 Select and set Yes.

Use ←/→ to select **Yes**, then press **ENTER**.

- The help menu is displayed if the player cannot connect to the Internet. Check the connections and settings (pages 17 and 41).

5 Downloading of the software start.

The software download status is displayed on the screen.

- Depending on the Internet connection conditions, software downloading may take a certain period of time.

6 Updating starts.

The front panel display shows messages such as **"DATA CHECK"**, **"WRT SYS1"**, **"WRT DRV"** and **"WRT FLC"**.

- Software updating may take a certain period of time.

7 Updating completes.

The front panel display shows **"DOWNLOAD OK"** and the player turns off automatically.

Restoring all the settings to the factory default settings

1 Check that the player's power is turned on.

2 When a disc is playing, press ■ to stop playback.

Eject the disc from the player.

3 While pressing ■, press ⏻ STANDBY/ON.

Operate using the buttons on the player's front panel.

Note

- After restoring all the settings to the factory default settings, use **Setup Navigator** to reset the player (page 18).
- When all the settings are restored to the factory defaults, all the data for the secondary video (Picture-in-Picture), secondary audio, bookmarks, etc., is erased.

About the audio output settings

The audio signals that are output differ according to the audio format recorded on the disc and the player's settings. Check on the table below.

Caution

- When **ANALOG AUDIO** is selected at **Output Terminal**, no audio signals are output from the **HDMI OUT** terminal or **DIGITAL OUT** terminal (pages 18 and 43).
- When **HDMI** or **DIGITAL AUDIO** is selected at **Output Terminal**, linear PCM audio signals (2 channels) are output from all terminals other than the ones selected at **Output Terminal** (pages 18 and 43).
- *The output from all terminals other than the ones selected for* **Audio** *does not sound as intended by the content provider.*

Audio format		AUDIO OUT terminals	DIGITAL OUT terminal		HDMI OUT terminal	
			Converted to linear PCM audio[1]	Not converted to linear PCM audio[2]	PCM[3]	Auto[3]
BD-ROM	Dolby Digital	Converted to 2-channel audio	Converted to 2-channel audio	Dolby Digital[4]	5.1-channel audio	Dolby Digital[5,6]
	Dolby Digital Plus				7.1-channel audio	Dolby Digital Plus[5,6]
	Dolby TrueHD				7.1-channel audio[7]	Dolby TrueHD[5,6,8]
	DTS Digital Surround			DTS Digital Surround[4]	7.1-channel audio	DTS Digital Surround[5,9]
	DTS-HD High Resolution Audio				7.1-channel audio[7]	DTS-HD High Resolution Audio[5,7,9]
	DTS-HD Master Audio					DTS-HD Master Audio[5,9,10]
	Linear PCM			Converted to 2-channel audio	7.1-channel audio[7]	
BD-R/-RE	Dolby Digital	Converted to 2-channel audio	Converted to 2-channel audio	Dolby Digital	5.1-channel audio	Dolby Digital[6]
	MPEG-2 AAC			MPEG-2 AAC		MPEG-2 AAC
	MPEG			2-channel audio		
	Linear PCM					
DVD-Video	Dolby Digital	Converted to 2-channel audio	Converted to 2-channel audio	Dolby Digital	5.1-channel audio	Dolby Digital[6]
	DTS Digital Surround			DTS Digital Surround		DTS Digital Surround[9]
	MPEG			2-channel audio		
	Linear PCM					
DVD-R/-RW (VR format)	Dolby Digital	Converted to 2-channel audio	Converted to 2-channel audio	Dolby Digital	5.1-channel audio	Dolby Digital[6]
	MPEG			2-channel audio		
	Linear PCM					

1. When **Dolby Digital Out** is set to **Dolby Digital → PCM**, **DTS Out** is set to **DTS → PCM**, or **AAC Out** is set to **AAC → PCM** (page 37).
2. When **Dolby Digital Out** is set to **Dolby Digital 1**/**Dolby Digital 2**, **DTS Out** is set to **DTS 1**/**DTS 2** or **AAC Out** is set to **AAC** (page 37).
3. When **HDMI Audio Out** is set to **PCM** or **Auto** (page 38).
4. When outputting Dolby Digital or DTS Digital Surround bitstream with settings of **Dolby Digital 2** at **Dolby Digital Out**, **DTS 2** at **DTS Out**, the secondary audio and interactive audio signals are not mixed for output.
5. When outputting the bitstream of Dolby TrueHD, Dolby Digital Plus, Dolby Digital, DTS-HD Master Audio, DTS-HD High Resolution Audio or DTS Digital Surround, the secondary audio and interactive audio signals are not mixed for output.
6. If the connected HDMI device is not compatible with Dolby TrueHD or Dolby Digital Plus bitstream, the signals are output in linear PCM (7.1 channels) or Dolby Digital bitstream.
   If the connected HDMI device is not compatible with Dolby Digital bitstream, the signals are output in linear PCM (2 channels).
7. When the output video resolution is set to 576i/480i or 576p/480p, the signals may be output in linear PCM (2 channels), depending on **HDMI High Speed Transmission** setting and/or the connected HDMI device (page 13).
8. When the output video resolution is set to 576i/480i or 576p/480p, the signals may be output in linear PCM (2 channels) or Dolby Digital bitstream, depending on **HDMI High Speed Transmission** setting and/or the connected HDMI device (page 13).

9. If the connected HDMI device is not compatible with DTS-HD Master Audio or DTS-HD High Resolution Audio, the signals are output in linear PCM (2 channels) or DTS Digital Surround bitstream.
   If the connected HDMI device is not compatible with DTS Digital Surround bitstream, the signals are output in linear PCM (2 channels).
10. When the output video resolution is set to 576i/480i or 576p/480p, the signals may be output in linear PCM (2 channels) or DTS Digital Surround, depending on **HDMI High Speed Transmission** setting and/or the connected HDMI device.

Note

- Only compatible with 7.1-channel surround back. 6.1-channel surround back is output in 7.1 channels. In other cases, output as audio signals of 5.1-channels or less.
- When outputting linear PCM audio signals, if the number of compatible channels of the connected HDMI device is lower, the signals are output with the number of channels for which the device is compatible.
- The audio signals output from the **DIGITAL OUT** terminal have a sampling frequency of 48 kHz (44.1 kHz for audio CDs).

Language Code Table and Country/Area Code Table

❖ Language Code Table

Language name, **language code, input code**

Abkhazian, **ab/abk, 0102**
Afar, **aa/aar, 0101**
Afrikaans, **af/afr, 0106**
Albanian, **sq/sqi, 1917**
Amharic, **am/amh, 0113**
Arabic, **ar/ara, 0118**
Armenian, **hy/hye, 0825**
Assamese, **as/asm, 0119**
Aymara, **ay/aym, 0125**
Azerbaijani, **az/aze, 0126**
Bashkir, **ba/bak, 0201**
Basque, **eu/eus, 0521**
Belarusian, **be/bel, 0205**
Bengali, **bn/ben, 0214**
Bihari, **bh/bih, 0208**
Bislama, **bi/bis, 0209**
Breton, **br/bre, 0218**
Bulgarian, **bg/bul, 0207**
Burmese, **my/mya, 1325**
Catalan, **ca/cat, 0301**
Central Khmer, **km/khm, 1113**
Chinese, **zh/zho, 2608**
Corsican, **co/cos, 0315**
Croatian, **hr/hrv, 0818**
Czech, **cs/ces, 0319**
Danish, **da/dan, 0401**
Dutch, **nl/nld, 1412**
Dzongkha, **dz/dzo, 0426**
English, **en/eng, 0514**
Esperanto, **eo/epo, 0515**
Estonian, **et/est, 0520**
Finnish, **fi/fin, 0609**
Fijian, **fj/fij, 0610**
Faroese, **fo/fao, 0615**
French, **fr/fra, 0618**
Galician, **gl/glg, 0712**
Georgian, **ka/kat, 1101**
German, **de/deu, 0405**
Greek, **el/ell, 0512**
Guarani, **gn/grn, 0714**
Gujarati, **gu/guj, 0721**
Hausa, **ha/hau, 0801**
Hebrew, **iw/heb, 0923**
Hindi, **hi/hin, 0809**
Hungarian, **hu/hun, 0821**
Icelandic, **is/isl, 0919**
Indonesian, **in/ind, 0914**
Interlingua, **ia/ina, 0901**
Interlingue, **ie/ile, 0905**
Inupiaq, **ik/ipk, 0911**
Irish, **ga/gle, 0701**
Italian, **it/ita, 0920**
Japanese, **ja/jpn, 1001**
Javanese, **jw/jav, 1023**
Kalaallisut, **kl/kal, 1112**
Kannada, **kn/kan, 1114**
Kashmiri, **ks/kas, 1119**
Kazakh, **kk/kaz, 1111**
Kinyarwanda, **rw/kin, 1823**
Kirghiz, **ky/kir, 1125**
Korean, **ko/kor, 1115**
Kurdish, **ku/kur, 1121**
Lao, **lo/lao, 1215**
Latin, **la/lat, 1201**
Latvian, **lv/lav, 1222**
Lingala, **ln/lin, 1214**
Lithuanian, **lt/lit, 1220**
Macedonian, **mk/mkd, 1311**
Malagasy, **mg/mlg, 1307**
Malay, **ms/msa, 1319**
Malayalam, **ml/mal, 1312**
Maltese, **mt/mlt, 1320**
Maori, **mi/mri, 1309**
Marathi, **mr/mar, 1318**
Mongolian, **mn/mon, 1314**
Moldavian, **mo/mol, 1315**
Nauru, **na/nau, 1401**
Nepali, **ne/nep, 1405**
Norwegian, **no/nor, 1415**
Occitan, **oc/oci, 1503**
Oriya, **or/ori, 1518**
Oromo, **om/orm, 1513**
Panjabi, **pa/pan, 1601**
Persian, **fa/fas, 0601**
Polish, **pl/pol, 1612**
Portuguese, **pt/por, 1620**
Pushto, **ps/pus, 1619**
Quechua, **qu/que, 1721**
Romanian, **ro/ron, 1815**
Romansch, **rm/roh, 1813**
Rundi, **rn/run, 1814**
Russian, **ru/rus, 1821**
Samoan, **sm/smo, 1913**
Sango, **sg/sag, 1907**
Sanskrit, **sa/san, 1901**
Scottish Gaelic, **gd/gla, 0704**
Serbian, **sr/srp, 1918**
Serbo-Croatian, **sh/---, 1908**
Shona, **sn/sna, 1914**
Sindhi, **sd/snd, 1904**
Sinhalese, **si/sin, 1909**
Slovak, **sk/slk, 1911**
Slovenian, **sl/slv, 1912**
Somali, **so/som, 1915**
Sotho, Southern, **st/sot, 1920**
Spanish, **es/spa, 0519**
Sundanese, **su/sun, 1921**
Swahili, **sw/swa, 1923**
Swati, **ss/ssw, 1919**
Swedish, **sv/swe, 1922**
Tagalog, **tl/tgl, 2012**
Tajik, **tg/tgk, 2007**
Tamil, **ta/tam, 2001**
Tatar, **tt/tat, 2020**
Telugu, **te/tel, 2005**
Thai, **th/tha, 2008**
Tibetan, **bo/bod, 0215**
Tigrinya, **ti/tir, 2009**
Tonga (Tonga Islands), **to/ton, 2015**
Tsonga, **ts/tso, 2019**
Tswana, **tn/tsn, 2014**
Turkmen, **tk/tuk, 2011**
Turkish, **tr/tur, 2018**
Twi, **tw/twi, 2023**
Ukrainian, **uk/ukr, 2111**
Urdu, **ur/urd, 2118**
Uzbek, **uz/uzb, 2126**
Vietnamese, **vi/vie, 2209**
Volapük, **vo/vol, 2215**
Welsh, **cy/cym, 0325**
Western Frisian, **fy/fry, 0625**
Wolof, **wo/wol, 2315**
Xhosa, **xh/xho, 2408**
Yiddish, **ji/yid, 1009**
Yoruba, **yo/yor, 2515**
Zulu, **zu/zul, 2621**

❖ Country/Area Code Table

Country/Area name, **Country/Area code, input code**

Anguilla, **ai, 0109**
Antigua and Barbuda, **ag, 0107**
Argentina, **ar, 0118**
Armenia, **am, 0113**
Australia, **au, 0121**
Austria, **at, 0120**
Azerbaijan, **az, 0126**
Bahamas, **bs, 0219**
Barbados, **bb, 0202**
Belarus, **by, 0225**
Belgium, **be, 0205**
Belize, **bz, 0226**
Bermuda, **bm, 0213**
Brazil, **br, 0218**
Bulgaria, **bg, 0207**
Canada, **ca, 0301**
Cayman Islands, **ky, 1125**
Chile, **cl, 0312**
China, **cn, 0314**
Colombia, **co, 0315**
Croatia, **hr, 0818**
Cyprus, **cy, 0325**
Czech Republic, **cz, 0326**
Denmark, **dk, 0411**
Dominica, **dm, 0413**
Dominican Republic, **do, 0415**
Estonia, **ee, 0505**
Finland, **fi, 0609**
France, **fr, 0618**
Georgia, **ge, 0705**
Germany, **de, 0405**
Greece, **gr, 0718**
Greenland, **gl, 0712**
Grenada, **gd, 0704**
Guyana, **gy, 0725**
Haiti, **ht, 0820**
Hong Kong, **hk, 0811**
Hungary, **hu, 0821**
Iceland, **is, 0919**
India, **in, 0914**
Indonesia, **id, 0904**
Ireland, **ie, 0905**
Israel, **il, 0912**
Italy, **it, 0920**
Jamaica, **jm, 1013**
Japan, **jp, 1016**
Kazakhstan, **kz, 1126**
Korea, Republic of, **kr, 1118**
Kyrgyzstan, **kg, 1107**
Latvia, **lv, 1222**
Liechtenstein, **li, 1209**
Lithuania, **lt, 1220**
Luxembourg, **lu, 1221**
Macedonia, the Former Yugoslav Republic of, **mk, 1311**
Malaysia, **my, 1325**
Malta, **mt, 1320**
Mexico, **mx, 1324**
Moldova, Republic of, **md, 1304**
Monaco, **mc, 1303**
Montserrat, **ms, 1319**
Netherlands, **nl, 1412**
New Zealand, **nz, 1426**
Norway, **no, 1415**
Pakistan, **pk, 1611**
Peru, **pe, 1605**
Philippines, **ph, 1608**
Poland, **pl, 1612**
Portugal, **pt, 1620**
Puerto Rico, **pr, 1618**
Romania, **ro, 1815**
Russian Federation, **ru, 1821**
Saint Kitts and Nevis, **kn, 1114**
Saint Lucia, **lc, 1203**
Saint Vincent and the Grenadines, **vc, 2203**
San Marino, **sm, 1913**
Singapore, **sg, 1907**
Slovakia, **sk, 1911**
Slovenia, **si, 1909**
Spain, **es, 0519**
Suriname, **sr, 1918**
Sweden, **se, 1905**
Switzerland, **ch, 0308**
Taiwan, Province of China, **tw, 2023**
Tajikistan, **tj, 2010**
Thailand, **th, 2008**
Trinidad and Tobago, **tt, 2020**
Tunisia, **tn, 2014**
Turkey, **tr, 2018**
Turkmenistan, **tm, 2013**
Turks and Caicos Islands, **tc, 2003**
Ukraine, **ua, 2101**
United Kingdom, **gb, 0702**
United States, **us, 2119**
Uruguay, **uy, 2125**
Uzbekistan, **uz, 2126**
Venezuela, **ve, 2205**
Virgin Islands, British, **vg, 2207**

Chapter 7
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ARCHIVE LOCATIONS	Where to find newer versions of this software.
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FILE FORMAT WARS	Software *not* to get.
TO DO	Plans for future IJG releases.

Other documentation files in the distribution are:
User documentation:

install.doc	How to configure and install the IJG software.
usage.doc	Usage instructions for cjpeg, djpeg, jpegtran, rdjpgcom, and wrjpgcom.
*.1	Unix-style man pages for programs (same info as usage.doc).
wizard.doc	Advanced usage instructions for JPEG wizards only.
change.log	Version-to-version change highlights.

Programmer and internal documentation:

libjpeg.doc	How to use the JPEG library in your own programs.
example.c	Sample code for calling the JPEG library.
structure.doc	Overview of the JPEG library's internal structure.
filelist.doc	Road map of IJG files.
coderules.doc	Coding style rules --- please read if you contribute code.

Please read at least the files install.doc and usage.doc. Useful information can also be found in the JPEG FAQ (Frequently Asked Questions) article. See ARCHIVE LOCATIONS below to find out where to obtain the FAQ article.
If you want to understand how the JPEG code works, we suggest reading one or more of the REFERENCES, then looking at the documentation files (in roughly the order listed) before diving into the code.
OVERVIEW
This package contains C software to implement JPEG image compression and decompression. JPEG (pronounced "jay-peg") is a standardized compression method for full-color and gray-scale images. JPEG is intended for compressing real-world scenes; line drawings, cartoons and other non-realistic images are not its strong suit. JPEG is lossy, meaning that the output image is not exactly identical to the input image. Hence you must not use JPEG if you have to have identical output bits. However, on typical photographic images, very good compression levels can be obtained with no visible change, and remarkably high compression levels are possible if you can tolerate a low-quality image. For more details, see the references, or just experiment with various compression settings.
This software implements JPEG baseline, extended-sequential, and progressive compression processes. Provision is made for supporting all variants of these processes, although some uncommon parameter settings aren't implemented yet. For legal reasons, we are not distributing code for the arithmetic-coding variants of JPEG; see LEGAL ISSUES. We have made no provision for supporting the hierarchical or lossless processes defined in the standard.
We provide a set of library routines for reading and writing JPEG image files, plus two sample applications "cjpeg" and "djpeg", which use the library to perform conversion between JPEG and some other popular image file formats. The library is intended to be reused in other applications.
In order to support file conversion and viewing software, we have included considerable functionality beyond the bare JPEG coding/decoding capability; for example, the color quantization modules are not strictly part of JPEG decoding, but they are essential for output to colormapped file formats or colormapped displays. These extra functions can be compiled out of the library if not required for a particular application. We have also included jpegtran, a utility for lossless transcoding between different JPEG processes, and "rdjpgcom" and "wrjpgcom", two simple applications for inserting and extracting textual comments in JFIF files.
The emphasis in designing this software has been on achieving portability and flexibility, while also making it fast enough to be useful. In particular, the software is not intended to be read as a tutorial on JPEG. (See the REFERENCES section for introductory material.) Rather, it is intended to be reliable, portable, industrial-strength code. We do not claim to have achieved that goal in every aspect of the software, but we strive for it.
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The Unix configuration script "configure" was produced with GNU Autoconf. It is copyright by the Free Software Foundation but is freely distributable. The same holds for its supporting scripts (config.guess, config.sub, ltconfig, ltmain.sh). Another support script, install-sh, is copyright by M.I.T. but is also freely distributable.

It appears that the arithmetic coding option of the JPEG spec is covered by patents owned by IBM, AT&T, and Mitsubishi. Hence arithmetic coding cannot legally be used without obtaining one or more licenses. For this reason, support for arithmetic coding has been removed from the free JPEG software. (Since arithmetic coding provides only a marginal gain over the unpatented Huffman mode, it is unlikely that very many implementations will support it.) So far as we are aware, there are no patent restrictions on the remaining code.

The IJG distribution formerly included code to read and write GIF files. To avoid entanglement with the Unisys LZW patent, GIF reading support has been removed altogether, and the GIF writer has been simplified to produce uncompressed GIFs. This technique does not use the LZW algorithm; the resulting GIF files are larger than usual, but are readable by all standard GIF decoders.

We are required to state that

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REFERENCES

We highly recommend reading one or more of these references before trying to understand the innards of the JPEG software.

The best short technical introduction to the JPEG compression algorithm is

Wallace, Gregory K. "The JPEG Still Picture Compression Standard",
Communications of the ACM, April 1991 (vol. 34 no. 4), pp. 30-44.

(Adjacent articles in that issue discuss MPEG motion picture compression, applications of JPEG, and related topics.) If you don't have the CACM issue handy, a PostScript file containing a revised version of Wallace's article is available at ftp://ftp.uu.net/graphics/jpeg/wallace.ps.gz. The file (actually a preprint for an article that appeared in IEEE Trans. Consumer Electronics) omits the sample images that appeared in CACM, but it includes corrections and some added material. Note: the Wallace article is copyright ACM and IEEE, and it may not be used for commercial purposes.

A somewhat less technical, more leisurely introduction to JPEG can be found in The Data Compression Book by Mark Nelson and Jean-loup Gailly, published by M&T Books (New York), 2nd ed. 1996, ISBN 1-55851-434-1. This book provides good explanations and example C code for a multitude of compression methods including JPEG. It is an excellent source if you are comfortable reading C code but don't know much about data compression in general. The book's JPEG sample code is far from industrial-strength, but when you are ready to look at a full implementation, you've got one here...

The best full description of JPEG is the textbook "JPEG Still Image Data Compression Standard" by William B. Pennebaker and Joan L. Mitchell, published by Van Nostrand Reinhold, 1993, ISBN 0-442-01272-1. Price US$59.95, 638 pp. The book includes the complete text of the ISO JPEG standards (DIS 10918-1 and draft DIS 10918-2). This is by far the most complete exposition of JPEG in existence, and we highly recommend it.

The JPEG standard itself is not available electronically; you must order a paper copy through ISO or ITU. (Unless you feel a need to own a certified official copy, we recommend buying the Pennebaker and Mitchell book instead; it's much cheaper and includes a great deal of useful explanatory material.) In the USA, copies of the standard may be ordered from ANSI Sales at (212) 642-4900, or from Global Engineering Documents at (800) 854-7179. (ANSI doesn't take credit card orders, but Global does.) It's not cheap: as of 1992, ANSI was charging $95 for Part 1 and $47 for Part 2, plus 7% shipping/handling. The standard is divided into two parts, Part 1 being the actual specification, while Part 2 covers compliance testing methods. Part 1 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 1: Requirements and guidelines" and has document numbers ISO/IEC IS 10918-1, ITU-T T.81. Part 2 is titled "Digital Compression and Coding of Continuous-tone Still Images, Part 2: Compliance testing" and has document numbers ISO/IEC IS 10918-2, ITU-T T.83.

Some extensions to the original JPEG standard are defined in JPEG Part 3, a newer ISO standard numbered ISO/IEC IS 10918-3 and ITU-T T.84. IJG currently does not support any Part 3 extensions.

The JPEG standard does not specify all details of an interchangeable file format. For the omitted details we follow the "JFIF" conventions, revision 1.02. A copy of the JFIF spec is available from:

Literature Department
C-Cube Microsystems, Inc.
1778 McCarthy Blvd.
Milpitas, CA 95035
phone (408) 944-6300, fax (408) 944-6314

A PostScript version of this document is available by FTP at ftp://ftp.uu.net/graphics/jpeg/jfif.ps.gz. There is also a plain text version at ftp://ftp.uu.net/graphics/jpeg/jfif.txt.gz, but it is missing the figures.

The TIFF 6.0 file format specification can be obtained by FTP from ftp://ftp.sgi.com/graphics/tiff/TIFF6.ps.gz. The JPEG incorporation scheme found in the TIFF 6.0 spec of 3-June-92 has a number of serious problems. IJG does not recommend use of the TIFF 6.0 design (TIFF Compression tag 6). Instead, we recommend the JPEG design proposed by TIFF Technical Note #2 (Compression tag 7). Copies of this Note can be obtained from ftp.sgi.com or from ftp://ftp.uu.net/graphics/jpeg/. It is expected that the next revision of the TIFF spec will replace the 6.0 JPEG design with the Note's design. Although IJG's own code does not support TIFF/JPEG, the free libtiff library uses our library to implement TIFF/JPEG per the Note. libtiff is available from ftp://ftp.sgi.com/graphics/tiff/.

ARCHIVE LOCATIONS

The "official" archive site for this software is ftp.uu.net (Internet address 192.48.96.9). The most recent released version can always be found there in directory graphics/jpeg. This particular version will be archived as ftp://ftp.uu.net/graphics/jpeg/jpegsrc.v6b.tar.gz. If you don't have direct Internet access, UUNET's archives are also available via UUCP; contact help@uunet.uu.net for information on retrieving files that way.

Numerous Internet sites maintain copies of the UUNET files. However, only ftp.uu.net is guaranteed to have the latest official version.

You can also obtain this software in DOS-compatible "zip" archive format from the SimTel archives (ftp://ftp.simtel.net/pub/simtelnet/msdos/graphics/), or on CompuServe in the Graphics Support forum (GO CIS:GRAPHSUP), library 12 JPEG Tools. Again, these versions may sometimes lag behind the ftp.uu.net release.

The JPEG FAQ (Frequently Asked Questions) article is a useful source of general information about JPEG. It is updated constantly and therefore is not included in this distribution. The FAQ is posted every two weeks to Usenet newsgroups comp.graphics.misc, news.answers, and other groups. It is available on the World Wide Web at http://www.faqs.org/faqs/jpeg-faq/ and other news.answers archive sites, including the official news.answers archive at rtfm.mit.edu: ftp://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/. If you don't have Web or FTP access, send e-mail to mail-server@rtfm.mit.edu with body

send usenet/news.answers/jpeg-faq/part1
send usenet/news.answers/jpeg-faq/part2

RELATED SOFTWARE

Numerous viewing and image manipulation programs now support JPEG. (Quite a few of them use this library to do so.) The JPEG FAQ described above lists some of the more popular free and shareware viewers, and tells where to obtain them on Internet.

If you are on a Unix machine, we highly recommend Jef Poskanzer's free PBMPLUS software, which provides many useful operations on PPM-format image files. In particular, it can convert PPM images to and from a wide range of other formats, thus making cjpeg/djpeg considerably more useful. The latest version is distributed by the NetPBM group, and is available from numerous sites, notably ftp://wuarchive.wustl.edu/graphics/graphics/packages/NetPBM/. Unfortunately PBMPLUS/NETPBM is not nearly as portable as the IJG software is; you are likely to have difficulty making it work on any non-Unix machine.

A different free JPEG implementation, written by the PVRG group at Stanford, is available from ftp://havefun.stanford.edu/pub/jpeg/. This program is designed for research and experimentation rather than production use; it is slower, harder to use, and less portable than the IJG code, but it is easier to read and modify. Also, the PVRG code supports lossless JPEG, which we do not. (On the other hand, it doesn't do progressive JPEG.)

FILE FORMAT WARS

Some JPEG programs produce files that are not compatible with our library. The root of the problem is that the ISO JPEG committee failed to specify a concrete file format. Some vendors "filled in the blanks" on their own, creating proprietary formats that no one else could read. (For example, none of the early commercial JPEG implementations for the Macintosh were able to exchange compressed files.)

The file format we have adopted is called JFIF (see REFERENCES). This format has been agreed to by a number of major commercial JPEG vendors, and it has become the de facto standard. JFIF is a minimal or "low end" representation. We recommend the use of TIFF/JPEG (TIFF revision 6.0 as modified by TIFF Technical Note #2) for "high end" applications that need to record a lot of additional data about an image. TIFF/JPEG is fairly new and not yet widely supported, unfortunately.

The upcoming JPEG Part 3 standard defines a file format called SPIFF. SPIFF is interoperable with JFIF, in the sense that most JFIF decoders should be able to read the most common variant of SPIFF. SPIFF has some technical advantages over JFIF, but its major claim to fame is simply that it is an official standard rather than an informal one. At this point it is unclear whether SPIFF will supersede JFIF or whether JFIF will remain the de-facto standard. IJG intends to support SPIFF once the standard is frozen, but we have not decided whether it should become our default output format or not. (In any case, our decoder will remain capable of reading JFIF indefinitely.)

Various proprietary file formats incorporating JPEG compression also exist. We have little or no sympathy for the existence of these formats. Indeed, one of the original reasons for developing this free software was to help force convergence on common, open format standards for JPEG files. Don't use a proprietary file format!

TO DO

The major thrust for v7 will probably be improvement of visual quality. The current method for scaling the quantization tables is known not to be very good at low Q values. We also intend to investigate block boundary smoothing, "poor man's variable quantization", and other means of improving quality-vs-file-size performance without sacrificing compatibility.

In future versions, we are considering supporting some of the upcoming JPEG Part 3 extensions --- principally, variable quantization and the SPIFF file format.

As always, speeding things up is of great interest.

Please send bug reports, offers of help, etc. to jpeg-info@uunet.uu.net.

❖libupnp

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Cautions on use

Moving the player

If you need to move this unit, first remove the disc if there's one loaded, and close the disc tray. Next, press ⏻ **STANDBY/ON** to switch the power to standby, checking that the **POWER OFF** indication on the front panel display goes off. Wait at least 10 seconds. Lastly, disconnect the power cord.

Never lift or move the unit during playback — discs rotate at a high speed and may be damaged.

Place of installation

Select a stable place near the TV and AV system to which the unit is connected.

Do not place the player on top of a TV or color monitor. Keep it away from cassette decks or other components easily affected by magnetism.

Avoid the following types of places:

- Places exposed to direct sunlight
- Humid or poorly ventilated places
- Extremely hot or cold places
- Places subject to vibration
- Dusty places
- Places exposed to soot, steam or heat (in kitchens, etc.)

❖ Do not place objects on top

Do not place objects on top of the player.

❖ Do not obstruct the ventilation holes

Do not use the player on a shaggy rug, bed, or sofa, and do not cover the player with a cloth, etc. Doing so will prevent heat dissipation and could lead to damage.

❖ Keep away from heat

Do not place the player on top of an amplifier or other device generating heat. When installing in a rack, to avoid the heat generated by the amplifier and other devices, place it on a shelf below the amplifier whenever possible.

Turn the power off when not using the player

Depending on the conditions of the TV broadcast signals, striped patterns may appear on the screen when the TV is turned on while the player's power is turned on. This is not a malfunction with the player or TV. If this happens, turn the player's power off. In the same way, noise may be heard in the sound of a radio.

Condensation

If the player is moved suddenly from a cold place into a warm room (in winter, for example) or if the temperature in the room in which the player is installed rises suddenly due to a heater, etc., water droplets (condensation) may form inside (on operating parts and the lens). When condensation is present, the player will not operate properly and playback is not possible. Let the player stand at room temperature for 1 or 2 hours with the power turned on (the time depends on the extent of condensation). The water droplets will dissipate and playback will become possible.

Condensation can also occur in the summer if the player is exposed to the direct wind from an air-conditioner. If this happens, move the player to a different place.

Cleaning the player

Normally, wipe the player with a soft cloth. For tough dirt, apply some neutral detergent diluted in 5 to 6 parts water to a soft cloth, wring out thoroughly, wipe off the dirt, then wipe again with a dry cloth.

Note that getting alcohol, thinner, benzene or insecticide on the player could cause the print and coating to peel off. Also, avoid leaving rubber or vinyl products in contact with the player for long periods of time, as this could damage the cabinet.

When using chemical-impregnated wipes, etc., read the wipe's cautions carefully.

Unplug the power cord from the power outlet when cleaning the player.

Caution for when the unit is installed in a rack with a glass door

Do not press the ⏏ **OPEN/CLOSE** on the remote control to open the disc tray while the glass door is closed. The door will hamper the movement of the disc tray, and the unit could be damaged.

Cleaning the pickup lens

The player's lens should not become dirty in normal use, but if for some reason it should malfunction due to dust or dirt, consult your nearest Pioneer authorized service center. Although lens cleaners for players are commercially available, we advise against using them since some may damage the lens.

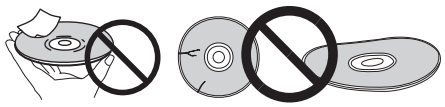
Handling discs

Do not use damaged (cracked or warped) discs.

Do not scratch the disc's signal surface or let it get dirty.

Do not load more than one disc into the player at a time.

Do not glue paper or put stickers onto the disc, or use a pencil, ball-point pen or other sharp-tipped writing instrument. These could all damage the disc.



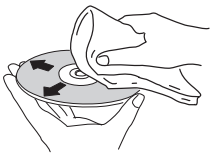
❖ Storing discs

Always store discs in their cases, and place the cases vertically, avoiding places exposed to high temperature or humidity, direct sunlight or extremely low temperatures.

Be sure to read the cautions included with the disc.

❖ Cleaning discs

It may not be possible to play the disc if there are fingerprints or dust on it. In this case, using a cleaning cloth, etc., to wipe the disc gently from the center toward the outer edge. Do not use a dirty cleaning cloth.



Do not use benzene, thinner or other volatile chemicals. Also do not use record spray or antistatic agents.

For tough dirt, apply some water to a soft cloth, wring out thoroughly, wipe off the dirt, then wipe off the moisture with a dry cloth.

❖ Specially shaped discs

Specially shaped discs (heart-shaped, hexagonal, etc.) cannot be used on this player. Never use such discs, as they will damage the player.

❖ Condensation on discs

If the disc is moved suddenly from a cold place into a warm room (in winter, for example), water droplets (condensation) may form on the disc surface. Discs will not play properly if there is condensation on them. Carefully wipe off the water droplets from the disc surface before using the disc.

Troubleshooting

Incorrect operation is often mistaken for trouble or malfunction. If you think that there is something wrong with this component, check the points below. Sometimes the trouble may lie in another component. Inspect the other components and electrical appliances being used. If the trouble cannot be rectified even after checking the points below, ask your nearest Pioneer authorized service center or your dealer to carry out repair work.

Playback

Problem	Check	Remedy
• Disc does not play. • Disc tray opens automatically.	Is the disc one that is playable on this player?	Check whether the disc is one that can be played on this player (page 7).
	Is the file one that is playable on this player?	• Check whether the file is one that can be played on this player (page 9). • Check whether or not the file is damaged.
	Is the disc scratched?	It may not be possible to play scratched discs.
	Is the disc dirty?	Clean the disc (above).
	Is there a piece of paper or sticker attached to the disc?	The disc may be warped and unplayable.
	Is the disc properly set in the disc tray?	• Set the disc with the printed side facing up. • Set the disc properly in the depression in the disc tray.
	Is the region number correct?	See *About region numbers* on page 9 for the region numbers of discs that can be played on this player.

Problem	Check	Remedy
No picture is displayed or the picture is not displayed properly.	Is the video cable properly connected?	• Connect the cable properly according to the connected devices (page 13). • Insert the cable firmly and all the way in.
	Is the video cable damaged?	If the cable is damaged, replace it with a new one.
	Is the input setting on the connected TV or AV receiver or amplifier right?	Read the operating instructions of the connected components and switch to the proper input.
	Are you viewing the picture from the video output terminal selected with **VIDEO SELECT**?	Press **VIDEO SELECT** to switch the video output terminal to be viewed (page 21).
	Is the output video resolution properly set?	Use **OUTPUT RESOLUTION** to switch to a resolution at which the video and audio signals are output (page 21).
	• Is the player connected with an HDMI cable other than a High Speed HDMI™ cable (with a Standard HDMI™ cable)? • Are you using an HDMI cable with built-in equalizer?	1080p or Deep Color video signals may not be output properly, depending on the HDMI cable being used or the player's settings. Press ■ while pressing ▶ on the player's front panel to restore the video outputs to the factory default settings. After this, if you wish to output the video signals with 1080p or Deep Color, connect the TV using a High Speed HDMI™ cable without built-in equalizer, then reset the player using the **Setup Navigator** (page 18).
	Does the connected TV support the frame rate of the video signal being output by the player?	If the picture is not displayed when playing a disc with a frame rate that is not supported, the picture will not be displayed even when playback is stopped. In this case, use the procedure below to switch the frame rate of the video signals output from the player. Eject the disc and close the disc tray. Then, press ⏏ **OPEN/CLOSE** while pressing ▶ on the player's front panel to switch to a frame rate supported by the connected TV.
	Is **NTSC on PAL TV** properly set?	When viewing the video signals output from the player's S-Video or Video terminal, set **NTSC on PAL TV** properly (page 37).
	Is a DVI device connected?	The picture may not be displayed properly if a DVI device is connected.
	Is **HDMI Color Space** properly set?	Change the **HDMI Color Space** setting (page 38).
Picture freezes and the front panel and remote control buttons stop working.		• Press ■ **STOP** to stop playback, then restart playback. • If the playback cannot be stopped, press ⏻ **STANDBY/ON** on the player's front panel to turn off the power, then turn the power back on. • If the power cannot be turned off, press and hold ⏻ **STANDBY/ON** on the player's front panel for over 5 seconds. The power will turn off.
Motion is unnatural or picture is not clear.		Change the **Pure Cinema** setting (page 34).
No picture is displayed or picture is not output in high definition when playing BDs.		With some discs, it may not be possible to output the video signals from the **VIDEO** output terminal or the **COMPONENT VIDEO** output terminals. In this case, connect using an HDMI cable (page 13).
• Picture is disturbed during playback. • Picture is dark.		• This player supports Macrovision analog copy protection technology. With some TVs (such as with built-in video deck), the picture will not be displayed properly when the copy protected DVD title is played. This is not a malfunction. • If the player and TV are connected via a DVD recorder/video deck, etc., the picture will not be displayed properly due to analog copy protection. Connect the player and TV directly.

Problem	Check	Remedy
• Picture is stretched. • Picture is cropped. • Aspect ratio cannot be switched.	Is the TV's aspect ratio properly set?	Read the TV's operating instructions and set the TV's aspect ratio properly.
	Is **TV Aspect Ratio** properly set?	Set **TV Aspect Ratio** properly (page 37).
	Is **4:3 Video Out** properly set?	Set **4:3 Video Out** properly (page 37).
	Is **DVD 16:9 Video Out** properly set?	Set **DVD 16:9 Video Out** properly (page 37).
		When video signals with a resolution of 1080/50i, 1080/50p, 720/50p, 1080/24p, 1080/60i, 1080/60p or 720/60p are being output from the **HDMI OUT** terminal or the **COMPONENT VIDEO** output terminals, they may be output with an aspect ratio of 16:9 even if **TV Aspect Ratio** is set to **4:3 (Standard)** (page 37).
Picture is interrupted.		The picture may be interrupted when the resolution of the recorded video signal switches. Press **OUTPUT RESOLUTION** to select a setting other than **Auto** or **Source Direct** (page 21).
The subtitles cannot be switched.		The subtitles cannot be switched for discs recorded on a DVD or BD recorder.
Sound and picture are not synchronized.	Is **Output Terminal** properly set?	Set **Output Terminal** properly (pages 18 and 43).
	Is **Lip Sync** properly set?	Adjust the amount of audio delay with the **Lip Sync** setting (page 35).
• No sound is output. • Sound is not output properly.	Is the disc played back in slow motion? Is the disc played back in fast forward or fast reverse?	No sound is output during slow motion play and forward and reverse scanning.
	Are the audio cables properly connected?	• Connect the cable properly according to the connected devices (page 13). • Insert the cable firmly and all the way in.
	Is the audio cable damaged?	If the cable is damaged, replace it with a new one.
	Are the connected components (AV receiver or amplifier, etc.) properly set?	Read the operating instructions of the connected components and check the volume, input, speaker settings, etc.
	Are you trying to listen to the sound of the **HDMI OUT** terminal while watching the picture from the **COMPONENT VIDEO** or **VIDEO** output terminals?	Audio signals are not output from the **HDMI OUT** terminal when video signals are being output from the **COMPONENT VIDEO** or **VIDEO** output terminals. When watching the picture of the **COMPONENT VIDEO** or **VIDEO** output terminals, connect an optical digital audio cable or regular audio cables to listen to the sound (page 16). Once connections are completed, use **Setup Navigator** to make the player's settings (page 18).
	Is **HDMI Audio Out** properly set?	Set **HDMI Audio Out** to **Auto** or **PCM**. (page 38).
	Is **Output Terminal** properly set?	When **ANALOG AUDIO** is selected at **Output Terminal**, no audio signals are output from the **HDMI OUT** or **DIGITAL OUT** terminal (page 43).
	Is the output video resolution properly set?	Use **OUTPUT RESOLUTION** to switch to the resolution at which the video and audio signals are output (page 21).
	Is a DVI device connected?	The sound will not be output from the **HDMI OUT** terminal if a DVI device is connected. Connect the device to a **DIGITAL OUT** terminal or the **AUDIO OUT** terminals (page 16).
		For some BDs, audio signals are only output from **DIGITAL OUT** terminal or the **HDMI OUT** terminal.

Problem	Check	Remedy
Multi-channel sound is not output.	Is **Output Terminal** properly set?	Linear PCM (2-channel) audio signals are output from output terminals other than the one set at **Output Terminal** under **Audio Out**. Set **Output Terminal** properly (page 43).
	Is the audio output of the connected AV receiver or amplifier, etc., properly set?	Read the operating instructions of the connected AV receiver or amplifier and check the audio output settings of AV receiver or amplifier.
	Is multi-channel sound selected?	Use the menu screen or **AUDIO** to switch the disc's sound to multi-channel.
Noise can be heard when outputting DTS Digital Surround signals from the **DIGITAL OUT** terminal.	Is the connected AV receiver or amplifier compatible with DTS Digital Surround?	If an AV receiver or amplifier that is not compatible with DTS Digital Surround is connected to the **DIGITAL OUT** terminal, set **DTS Out** to **DTS → PCM** (page 37).
192 kHz or 96 kHz digital audio signals cannot be output from the **DIGITAL OUT** terminal.		It is not possible to output 192 kHz or 96 kHz digital audio signals from this player's **DIGITAL OUT** terminal. The signals are automatically converted to 48 kHz or less for output.
Secondary audio or interactive audio is not output.	Is **HDMI Audio Out** properly set?	When listening to the sound from an **HDMI OUT** terminal, set **HDMI Audio Out** to **PCM** (page 38).
	Are **Dolby Digital Out** and **DTS Out** properly set?	When listening to the sound from an **DIGITAL OUT** terminal, set **Dolby Digital Out** to **Dolby Digital 1**, **DTS Out** to **DTS 1** (page 37).
Sound is fast or slow.	When an HDMI cable is connected, are audio signals being output from devices connected with cables other than HDMI cables?	When a Pioneer AV receiver or amplifier compatible with the PQLS function is connected directly to the player's **HDMI OUT** terminal using an HDMI cable, the PQLS function is activated when playing an audio CD (CD-DA). Because of this, the sound output from components other than the ones connected by HDMI cable may be fast or slow. If this happens, set **PQLS** to **Off** (page 38).
After a disc is inserted, **Loading** stays displayed and playback does not start.	Are there too many files recorded on the disc?	When a disc on which files are recorded is inserted, depending on the number of files recorded on the disc, loading may take several dozen minutes.
■ is displayed in file names, etc.		The characters that cannot be displayed on this player are displayed in ■.
A message indicating low memory appears while playing a BD-ROM disc.		• Perform **Individual/Shared Data Erase** or **Storage Format** (page 42). • Perform **Application Data Erase** (page 42).
The DVD layer of BD and DVD hybrid discs cannot be played.	Is **Hybrid Disc Playback** properly set?	Set **Hybrid Disc Playback** to **DVD** (page 39).
The CD layer of BD and CD hybrid discs cannot be played.	Is **Hybrid Disc Playback** properly set?	Set **Hybrid Disc Playback** to **CD** (page 39).
The BDMV format on BD-R/-RE discs cannot be played.		To play the BDMV format on BD-R/-RE discs containing both BDMV and BDAV formats, set **BDMV/BDAV Playback Priority** to **BDMV** (page 39).

KURO LINK

Problem	Check	Remedy
KURO LINK function does not work.	Is the HDMI cable properly connected?	To use the KURO LINK function, connect the Flat Screen TV, and AV system (AV receiver or amplifier, etc.) and HD AV Converter to the **HDMI OUT** terminal (page 15).
	Is the HDMI cable you are using a High Speed HDMI™ cable?	Use a High Speed HDMI™ cable. The KURO LINK function may not work properly if HDMI cable other than a High Speed HDMI™ cable is used.
	Are you connected to the TV using an HDMI cable to watch the picture?	If video signals are being output from a terminal other than the **HDMI OUT** terminal, the KURO LINK function does not work. Connect to the TV using an HDMI cable and press **VIDEO SELECT** to switch to the **HDMI OUT** terminal (pages 15 and 21).
	Is **KURO LINK** set to **On** on the player?	Set **KURO LINK** to **On** on the player (page 38).
	Does the connected device support the KURO LINK function?	• The KURO LINK function will not work with devices of other brands that do not support the KURO LINK function, even when connected using an HDMI cable. • The KURO LINK function will not work if devices that do not support the KURO LINK function are connected between the KURO LINK-compatible device and the player. • See *About connections to components of other makes supporting the KURO LINK function* on page 15. • Even when connected to a Pioneer product compatible with the KURO LINK function, some of the functions may not work. Also refer to the operating instructions of the connected device.
	Is KURO LINK set to On on the connected device?	Set KURO LINK to On on the connected device. The KURO LINK function operates when KURO LINK is set to On for all devices connected to the **HDMI OUT** terminal. Once connections and settings of all the devices are finished, be sure to check that the player's picture is output to the Flat Screen TV. (Also check after changing the connected devices and connecting and/or disconnecting HDMI cables.) If the player's picture is not being output to the Flat Screen TV, the KURO LINK function may not work properly. For details, refer to the operating instructions of the connected device.
	Are multiple players connected?	The KURO LINK function may not work if three or more players, including this player, are connected by HDMI cable.
The input does not switch automatically on the Flat Screen TV and AV system (AV receiver or amplifier, etc.) when playback is started on the player or the Home Menu or Home Media Gallery is displayed.	Is **Display Power On** set to **Off** on the player?	Set **Display Power On** to **On** (page 38).

Network

Problem	Check	Remedy
• BD-LIVE function (connection to the Internet) cannot be used. • "Connection to the software updating server failed" is displayed when you try to update the software.		Perform **Connection Test** (page 42). If "Network connection test completed successfully." is displayed, check the proxy server settings (page 41). Also there may be a problem with the Internet connection. Contact your Internet service provider.
"OK to grant network access to BD applications?" is displayed when a BD-LIVE compatible disc is read.		This is displayed if the BD-ROM does not have valid BD-LIVE network access approval. Select **No** if you do not want to authorize access to the network.

Problem	Check	Remedy
Software updating is slow.		Depending on the Internet connection and other conditions, some time may be required to update the software.
• "WRT NG ****" is displayed on the front panel display during software updating. (**** meaning any characters) • "WRT FAILED" is displayed on the front panel display during software updating.		The message is displayed when software updating has failed. Check again whether it can be updated properly.
A message other than "Network connection test completed successfully" is displayed when **Connection Test** is performed.	Is "LAN cable not connected" displayed?	Check that this player and Ethernet hub (or router with hub functionality) are properly connected.
	• Is "IP address cannot be obtained." displayed? • Is "No response from the gateway." displayed?	• If the IP address is obtained using the DHCP server function, check the setting is correct at the **Display Network Configuration** (page 41). For details on the DHCP server function, see the operating instructions of the Ethernet hub (or router with hub functionality). • Set the IP address manually.
	Is "IP address is overlapped." displayed?	• Check the operation and settings of the DHCP server function of the Ethernet hub (or router with hub functionality). For details on the DHCP server function, see the operating instructions of the Ethernet hub (or router with hub functionality). • If this player's has been set manually, reset the IP address of this player or other components.
	Is the Ethernet hub (or router with hub functionality) operating properly?	• Check the settings and operation the Ethernet hub (or router with hub functionality). For details, see the operating instructions of the Ethernet hub. • Reboot the Ethernet hub (or router with hub functionality).

Others

Problem	Check	Remedy
The player's power turns off automatically.	Is **Auto Power Off** set to **On**?	If **Auto Power Off** is set to **On**, the player's power turns off automatically if no operation is performed for over 30 minutes (page 40).
	Is **Display Power Off** set to **On**?	The player's power may turn off together with the power of the TV connected to the **HDMI OUT** terminal. If you do not want the player's power to turn off when the TV's power is turned off, set **Display Power Off** to **Off** (page 38).
The player's power turns on automatically.	Is **KURO LINK** set to **On**?	The player's power may turn on together with the power of the TV connected to the **HDMI OUT** terminal. If you do not want the player's power to turn on when the TV's power is turned on, set **KURO LINK** to **Off** (page 38).
Player cannot be operated with remote control.	Is an AV receiver or amplifier connected to the **CONTROL IN** terminal on the player's rear panel?	Operate with the remote control of the device connected to the **CONTROL IN** terminal.
	Are you operating the remote control from a point too far away from the player?	Operate from within 7 m of the remote control sensor.
	Are the batteries dead?	Replace the batteries (page 6).
Input of connected TV, and AV system and HD AV Converter switches automatically.	Is **KURO LINK** set to **On**?	The input of the TV, and AV system (AV receiver or amplifier, etc.) and HD AV Converter connected to the **HDMI OUT** terminal may automatically switch to the player when playback starts on the player or the menu screen (Home Media Gallery, etc.) is displayed. If you do not want the inputs of the connected TV, and AV system (AV receiver or amplifier, etc.) and HD AV Converter to switch automatically, set **KURO LINK** to **Off** (page 38).
"Processing failed." is displayed.		If the message appears repeatedly, please ask your nearest Pioneer authorized service center or your dealer to carry out repair work.

Problem	Check	Remedy
Settings you have made have been cleared.	• Have you disconnected the power cord while the player's power was on? • Has there been a power failure?	Always press ⏻ **STANDBY/ON** on the player's front panel or ⏻ **STANDBY/ON** on the remote control and check that **POWER OFF** has turned off from the player's front panel display before disconnecting the power cord. Be particularly careful when the power cord is connected to the AC outlet on another device because the player turns off in conjunction with the device.
EXT does not light on the player's front panel display when a USB (external storage) device is connected.	Is the external storage device properly connected?	• Turn the player's power off, then turn the power back on. • Turn the player's power off, then reconnect the external storage device (page 16).
	Are you using a USB cable that is longer than 2 meters?	Use a USB cable with a length of 2 meters or less.
	Is the power of the external hard disk turned on?	Turn the player's power off, then turn the external hard disk's power on.
	Is the external storage device connected to the **USB** port via a memory card reader or USB hub?	External storage device may not work if connected to the **USB** port via a memory card reader or USB hub.
	Does the external storage device contain multiple partitions?	External storage devices may not be recognized if they contain multiple partitions.
		Some external storage devices may not operate.
EXT flashes on the player's front panel display when a USB (external storage) device is connected.	Is the external storage device write-protected?	Turn the player's power off, then disable the write-protection.
	Is the external storage device's file system FAT16 or FAT32?	Only external storage devices with a FAT16 or FAT32 file system can be used. They may be usable if they are formatted from the player (page 42).
		Turn the player's power off, then turn the power back on.

Glossary

❖ Angle (Multi angle)
Up to 9 camera angles can be recorded simultaneously on BD-ROM or DVD-Video discs, letting you view the same scene from different angles.

❖ AVCHD (Advanced Video Codec High Definition)
See *Playing DVDs* on page 9.

❖ BDAV
Of the BD format, the Audio Visual Format Specifications for HD digital broadcast recording is referred to as BDAV on this player and in this operating instructions.

❖ BD-J
See *Playing BDs* on page 8.

❖ BD-LIVE
See *Playing BDs* on page 8.

❖ BDMV
Of the BD format, the Audio Visual Format Specifications designed for pre-packaged high definition (HD) movie contents is referred to as BDMV on this player and in this operating instructions.

❖ BONUSVIEW
See *Playing BDs* on page 8.

❖ Component video output
This video output terminal provides clearer pictures when connected to a TV equipped with component inputs. Component video signals consist of three signals, Y, P_B and P_R.

❖ Deep Color
See *About HDMI* on page 13.

❖ Default Gateway
A default gateway is a communication device such as a router which passes data between networks. It is used to direct data to networks on which the destination gateway is not explicitly specified.

❖ DHCP (Dynamic Host Configuration Protocol)
This protocol provides configuration parameters (IP address, etc.) for computers and other devices connected to the network.

❖ DivX
See *Supported video file formats* on page 9.

❖ DNS (Domain Name System)
This is a system for associating Internet host names with IP addresses.

❖ Dolby Digital
Dolby Digital is an audio format to record the sound in up to 5.1 channels with a fraction of the amount of data as compared to linear PCM audio signals.

❖ Dolby Digital Plus
Dolby Digital Plus is an audio format for high-definition media. Built on Dolby Digital, it combines the efficiency and flexibility to provide high quality multi-channel audio. With BD-ROMs, up to 7.1 channels of digital sound can be recorded.

❖ Dolby TrueHD
Dolby TrueHD is an audio format using lossless coding. With BD-ROMs, up to 8 channels can be recorded at 96 kHz/24 bits, or up to 6 channels at 192 kHz/24 bits.

❖ DRM
A technology for protecting copyrighted digital data. Digitized videos, images and audio retain the same quality even when they are copied or transferred repeatedly. DRM is a technology for restricting the distribution or playback of such digital data without the authorization of the copyright holder.

❖ DTS Digital Surround
DTS Digital Surround is an audio format to record 48 kHz/24 bits audio signals in 5.1 channels.

❖ DTS-HD High Resolution Audio
DTS-HD High Resolution Audio is an audio format using lossy coding. It can record 7.1 channels at 96 kHz/24 bits.

❖ DTS-HD Master Audio
DTS-HD Master Audio is an audio format using lossless coding. With BD-ROMs, 7.1 channels can be recorded at 96 kHz/24 bits, or 5.1 channels at 192 kHz/24 bits.

❖ Ethernet
A standard for local area networks (LANs) used to connect multiple computers, etc. in the same location. This player supports 100BASE-TX.

❖ Frames and fields
A frame is the unit for one of the still pictures which compose motion pictures. One frame consists of a picture of odd lines and a picture of even lines called fields in video signal with interlaced scan method (576i, 1080i, etc.).

❖ HDMI (High-Definition Multimedia Interface)
See *About HDMI* on page 13.

❖ Interactive audio
The audio signals recorded in the titles of BD-ROMs. They include for example the clicking sound made when the menu screen is operated.

❖ Interlaced scan
With this method, one picture is displayed by scanning it twice. The odd lines are displayed in the first pass, the even lines are displayed in the second, to form a single picture (frame). Interlaced scan is indicated in this player and operating instructions by an "i" after the resolution value (for example, 576i).

❖ IP address
An address that identifies a computer or other device connected to the Internet or local area network. It is represented a number in four sections.

❖ Linear PCM
This is referred as the audio signals that are not compressed.

❖ MAC (Media Access Control) address
A hardware identification number assigned specifically to the network device (LAN card, etc.).

❖ MPEG (Moving Picture Experts Group)
The name of a family of standards used to encode video and audio signals in a digital compressed format. The video encoding standards include MPEG-1 Video, MPEG-2 Video, MPEG-4 Visual, MPEG-4 AVC, etc. The audio encoding standards include MPEG-1 Audio, MPEG-2 Audio, MPEG-2 AAC, etc.

❖ Parental Lock
See *Changing the Parental Lock level for viewing DVDs* and *Changing the Age Restriction for viewing BD-ROMs* on page 43.

❖ Picture-in-Picture (P-in-P)
This is a function for superimposing a sub video on the main video. Some BD-ROMs include secondary video, which can be superimposed on the primary video.

❖ Port number
This is a sub-address provided below the IP address for simultaneously connecting to multiple parties during Internet communications.

❖ Progressive scan
With this method, one picture is consisted of a single picture, without dividing it in two pictures. Progressive scan provides clear pictures with no flicker, in particular for still pictures that contain much text, graphics, or horizontal lines. Progressive scan is indicated in this player and operating instructions by a "p" after the resolution value (for example, 576p).

❖ Proxy server
This is a relay server for ensuring fast access and safe communications when connecting to the Internet from an internal network.

❖ Region number
See *About region numbers* on page 9.

❖ Secondary audio
Some BD-ROMs include sub audio streams mixed with the main audio stream. These sub audio streams are called "secondary audio". On some discs this secondary audio is recorded as the audio for the secondary video.

❖ Secondary video
Some BD-ROMs include sub videos superimposed on the main videos using the Picture-in-Picture function. These sub videos are called "secondary video".

❖ Subnet mask
This is used to identify which part of the IP address corresponds to the subnet (a separately managed network). The subnet mask is expressed as '255.255.255.0'.

❖ USB(Universal Serial Bus)
USB is the industry standard for connecting peripherals to PCs.

❖ VC-1
A video codec developed by Microsoft and standardized by the Society of Motion Picture and Television Engineers (SMPTE). Some BDs include videos encoded in this codec.

❖ x.v.Color
See *About HDMI* on page 13.

Specifications

Model			BDP-320
Type			Blu-ray Disc PLAYER
Rated voltage			*Europe, Australia and New Zealand models:* AC 220 V to 240 V
			Others: AC 110 V to 240 V
Rated frequency			50 Hz/60 Hz
Power consumption			32 W
Power consumption (standby)			0.3 W
Weight			3.5 kg
External dimensions (including projecting parts)			420 mm (W) x 75 mm (H) x 287 mm (D)
Tolerable operating temperature			+5 °C to +35 °C
Tolerable operating humidity			5 % to 85 % (no condensation)
Output terminals	**HDMI**		1 set, 19-pin: 5 V, 250 mA
	Video outputs	**Video**	1 set, RCA jack: 1.0 Vp-p (75 Ω)
		Component video	1 set, RCA jacks: Y: 1.0 Vp-p (75 Ω) PB, PR: 0.7 Vp-p (75 Ω)
	Audio outputs	**2-channel (left/right)**	1 set, RCA jacks
		Audio output level	200 mVrms (1 kHz, –20 dB)
		Frequency response	4 Hz to 88 kHz (192 kHz sampling)
	Digital audio outputs	**Optical**	1 set, Optical digital jack
LAN			1 set, Ethernet jack (100BASE-TX)
Control	**Input**		1 set, Minijack (3.5 ø)
USB			1 set, Type A

Note

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Please refer to our website for information regarding software updates and service to this product.

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